Pioneer sound.vision.soul

Service Manual

ORDER NO.
CRT3485

XM SATELLITE DIGITAL TUNER

GEX-P920XM/XN/UC

This service manual should be used together with the following manual(s) listed below. For the parts numbers, adjustments, etc. which are not shown in this manual, refer to the following manual(s).

Model No.	Order No.	Mech.Module	Remarks
GEX-P10XMT/XN/UC	CRT3424		

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
ⓒ**PIONEER CORPORATION 2005**
K-ZZW. MAY 2005 Printed in Japan

SAFETY INFORMATION

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

EXPLODED VIEWS AND PARTS LIST

PACKING(Page 6)

● **PACKING SECTION PARTS LIST**

Mark	No.	Description	GEX-P10XMT/XN/UC	GEX-P920XM/XN/UC
	2	Cord Assy	CDE5880	Not used
	3	Cord Assy	CDE8009	CDE5831
	4	Cord Assy	CDE7836	Not used
	12	Sub Carton	CHG5471	CHG5548
	13	Carton	CHG5472	CHG5547
	14	Contain Box	CHL5472	CHL5547
	18	Owner's Manual	CRB2045	CRB2102
	19	Installation Manual	CRB2046	CRB2103

EXTERIOR(Page 8)

● **EXTERIOR SECTION PARTS LIST**

Mark	No.	Description	GEX-P10XMT/XN/UC	GEX-P920XM/XN/UC
	3	Cord Assy	CDE8009	CDE5831
	5	Cap	CNS6329	Not used
	8	Case	CNB3106	CNB3165
	11	Main Unit	CWM9857	CWN1243
	16	Connector(CN451)	CKS4473	Not used

ELECTRICAL PARTS LIST(Page 32)

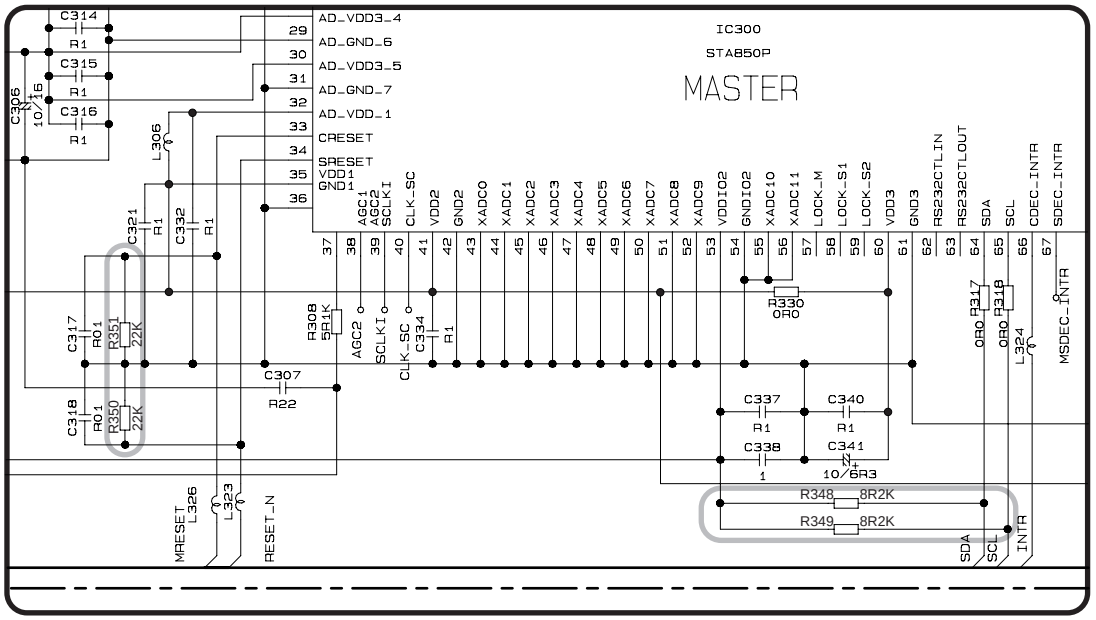
MAIN UNIT

Circuit Symbol and No.	GEX-P10XMT/XN/UC	GEX-P920XM/XN/UC
IC200 IC	STA850P	Not used
IC260 IC	K4S280832F-TC75	Not used
IC452 IC	UPD4721GS	Not used
IC601 IC	PEG099A	PEG135A
IC605 IC	PEG100A	Not used
Q452 Transistor	UMD2N	Not used
Q454 Transistor	2SC4081	Not used
D451-454 Diode	UDZS12(B)	Not used
D455 Diode	1SS355	Not used
D912 Diode	UDZS6R8(B)	Not used
L201-204, 208 Inductor	CTF1306	Not used
L205, 207, 209, 312-314, 325 Ferrite Bead	CTF1528	Not used
L452, 603 Inductor	CTF1473	Not used
L453, 454 Inductor	CTF1334	Not used
X601 Resonator 16.77Hz	CSS1686	Not used
⚠FU451, 452 Fuse 2A	CEK1284	Not used
R200-203	RS1/16SS102J	Not used
R204, 205	RS1/16SS223J	Not used
R206	RS1/16SS3002F	Not used
R207	RS1/16SS2002F	Not used
R208, 222, 223, 227-229, 314, 346, 347	RS1/16S0R0J	Not used
R209-211, 219, 221, 225	RAB4CQ470J	Not used
R212, 224, 341-343	RS1/16SS470J	Not used
R213, 215-218	RS1/16SS0R0J	Not used
R214, 220	RS1/16S822J	Not used
R230-234	RS1/16SS103J	Not used
R348, 349	Not used	RS1/16SS822J
R350, 351	Not used	RS1/16SS223J
R453, 454, 457, 458	RS1/16S101J	Not used
R455, 456	RS1/16SS681J	Not used
R459-462	RS1/16S333J	Not used
R601, 602, 605, 606, 612, 629, 666	RS1/16S473J	Not used
R608	RS1/16S104J	Not used
R630	RS1/16S0R0J	Not used
R645, 651-653, 658, 659, 665	RS1/16S101J	Not used
R648	Not used	RS1/16S473J
R669	RS1/16S105J	Not used
R670	Not used	RS1/16S0R0J
R672, 673	Not used	RS1/16S103J
R856	RS1/16S2701D	RS1/16S1501D

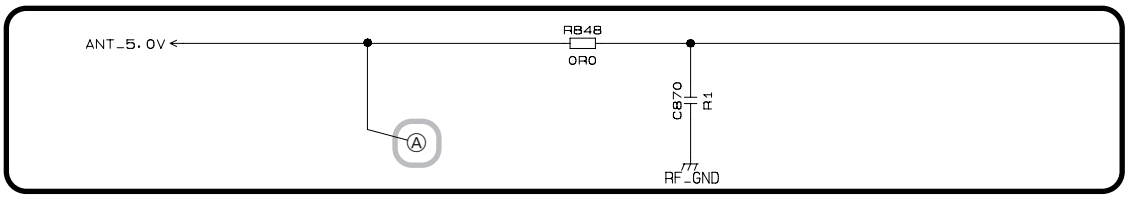
Circuit Symbol and No.	GEX-P10XMT/XN/UC	GEX-P920XM/XN/UC
R915	RS1/16S472J	Not used
R916	RS1/16S103J	RS1/16S101J
R917	RS1/16S473J	RS1/16S101J
C200-203, 219, 220	CKSSYB103K16	Not used
C204, 260, 610	CEVW100M16	Not used
C205, 206, 218, 233, 235, 246	CKSRYB105K6R3	Not used
C207-213, 216, 217, 222, 224, 226, 228-232	CKSSYB104K10	Not used
C214, 215	CCSRCH180J50	Not used
C221, 223, 225, 227	CCSSCH101J50	Not used
C234, 236, 237, 240-244, 257, 258. 261-267	CKSSYB104K10	Not used
C238, 239, 245, 251	CSZS100M6R3	Not used
C247, 248	CKSQYB475K6R3	Not used
C252, 608, 609	CCSSCH100D50	Not used
C253-256	CCSSCH4R0C50	Not used
C259, 268-286, 290-296, 299, 419	CCSSCH220J50	Not used
C425, 462, 465	CKSSYB104K10	Not used
C454 10000pF	CCG1171	Not used
C455-459 1µF	CCG1207	Not used
C460, 461, 617, 619	CKSRYB102K50	Not used
C463, 603, 616, 618	CKSRYB104K25	Not used
C625	Not used	CKSRYB103K50
C833	CEVW101M6R3	CEVW101M16
C859	CKSRYB104K25	CKSRYB224K16

• The ⚠ mark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.

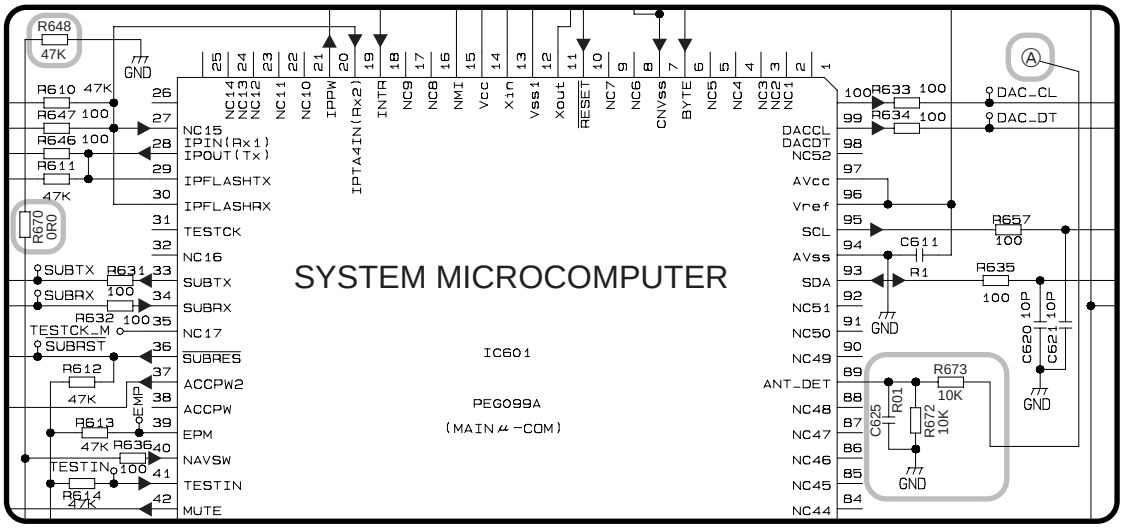
Page15 : 8-B



Page20 : 3-E



Page21 : 5-B, Page23 : 6-E



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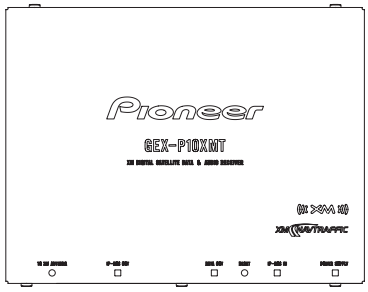
Service Manual



GEX-P10XMT/XN/UC

ORDER NO.
CRT3424

XM DIGITAL SATELLITE DATA & AUDIO RECEIVER

GEX-P10XMT /XN/UC

● **Caution**

- **When users complain "No Signal" is displayed, there is a possibility that an installed XM antenna cable has shorted out only occasionally.**
  If there are no problems in the main tuner by a service-man checking or NTF is used, let users confirm that the XM antenna cable has no short-circuit.
- **Connect the Acc lead of the Cord Assy (CDE8009) only when IP-BUS is not connected.**

For details, refer to "Important Check Points for Good Servicing".

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ⓒ**PIONEER CORPORATION 2005**

K-ZZW. FEB. 2005 Printed in Japan

SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

● Service Precautions

1. You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

SAFETY INFORMATION 2
1. SPECIFICATIONS 5
2. EXPLODED VIEWS AND PARTS LIST 6
2.1 PACKING 6
2.2 EXTERIOR 8
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM 10
3.1 BLOCK DIAGRAM 10
3.2 MAIN UNIT(DSP) 12
3.3 MAIN UNIT(SYSCOM) 18
3.4 TUNER UNIT 24
4. PCB CONNECTION DIAGRAM 26
4.1 MAIN UNIT 26
4.2 TUNER UNIT 30
5. ELECTRICAL PARTS LIST 32
6. ADJUSTMENT 39
6.1 TEST MODE 39
7. GENERAL INFORMATION 51
7.1 DIAGNOSIS 51
7.1.1 DISASSEMBLY 51
7.1.2 CONNECTOR FUNCTION DESCRIPTION 52
7.2 IC 53
7.3 OPERATIONAL FLOW CHART 60
8. OPERATIONS 61

1. SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption
..... 2.0 A
Backup current..... 3.0 mA or less
Dimensions (W x H x D) ..... 179 x 27 x 139 mm
(7 x 1 x 5-1/2 in.)
Weight ..... 0.57 kg (1.26 lbs)

XM tuner

Frequency range ..... 2,332.50 – 2,345.00 MHz
Usable sensitivity
Satellite ..... – 105.0 dBm
Terrestrial ..... – 102.0 dBm

Audio

Signal-to-noise ratio ..... 90 dB (IHF-A network)
Separation ..... 85 dB

Antenna

Power source (Provided by the satellite line)
..... 4.9 V DC
(4.4 – 5.4 V allowable)
Max. current consumption
..... 0.1 A
Type ..... Active type
Dimensions
Base (W x H x D) ..... 29 x 14 x 40 mm
[1-1/8 x 1/2 x 1-5/8 in]
Cord ..... 5 m
Weight ..... 0.06 kg (0.13 lbs)

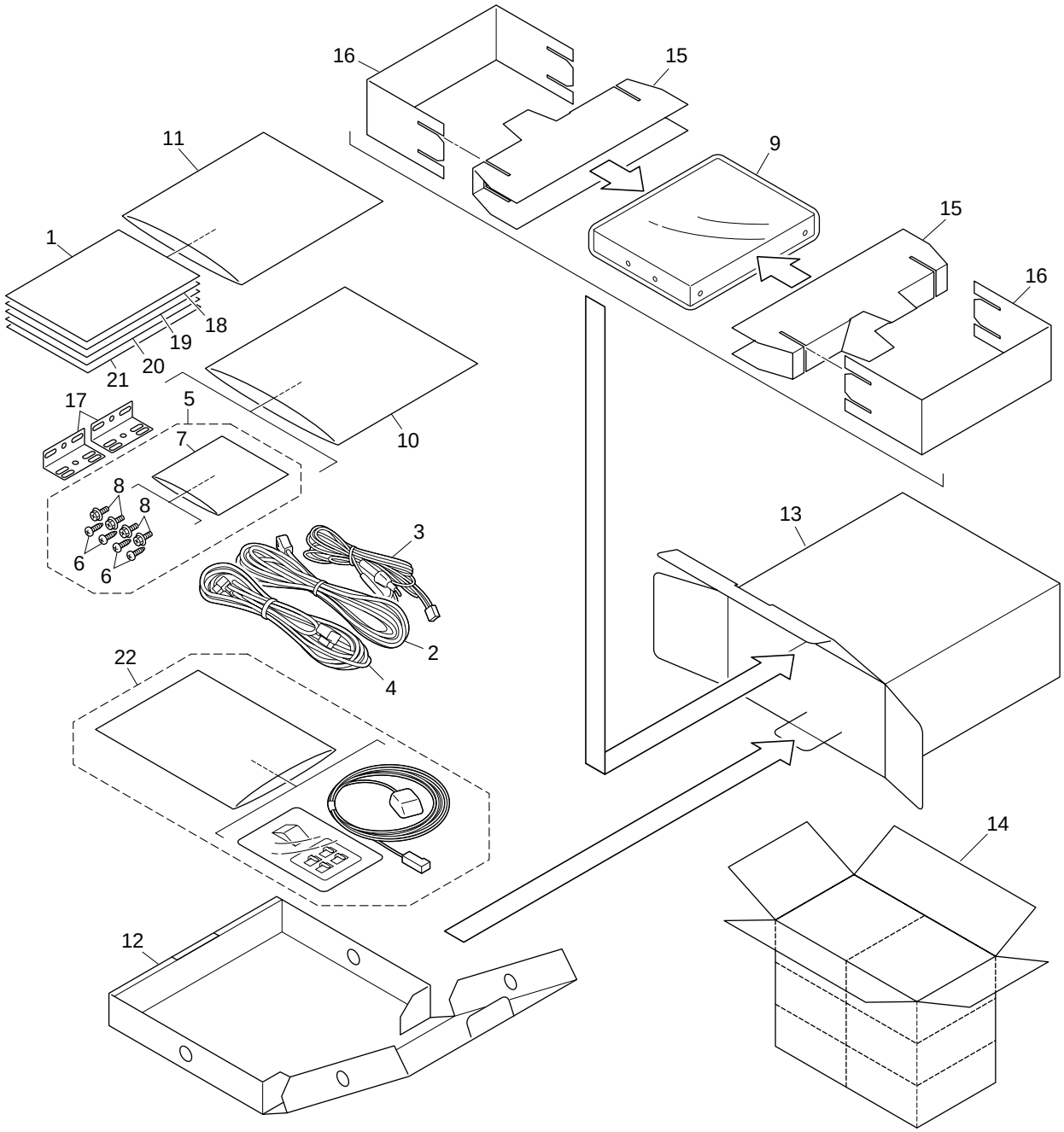
Note

Due to possible improvements, specifications and design are subject to change without notice.

2. EXPLODED VIEWS AND PARTS LIST

NOTES : • *Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
• *The ⚠ mark found on some component parts indicatesthe importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
• *Screw adjacent to▽mark on the product are used for disassembly.*
• *For the applying amount of lobricants or glue, follow the instructions in this manual. (In the case of no amount instructions,apply as you think it appropriate.)*

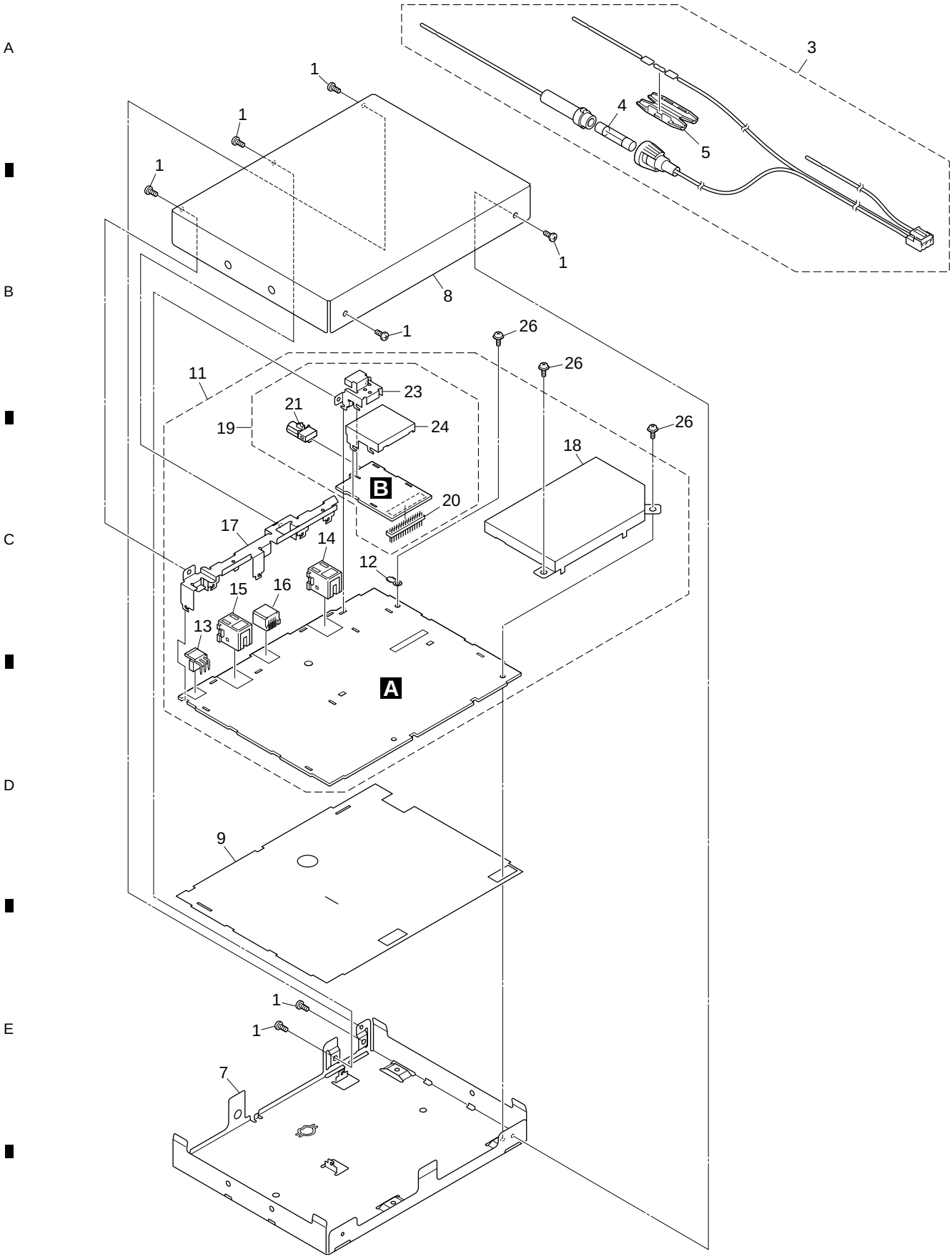
2.1 PACKING



PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
*	1	Card	ARY1048
	2	Cord Assy	CDE5880
	3	Cord Assy	CDE8009
	4	Cord Assy	CDE7836
	5	Screw Assy	CEA5014
	6	Screw	BNC40P120FTB
*	7	Polyethylene Bag	CEG1158
	8	Screw	HMF40P060FTB
	9	Cover	CEG1098
*	10	Polyethylene Bag	CEG1101
	11	Polyethylene Bag	CEG1116
	12	Sub Carton	CHG5471
	13	Carton	CHG5472
	14	Contain Box	CHL5472
	15	Protector	CHP2968
	16	Protector	CHP2969
	17	Angle	CNB2351
	18	Owner's Manual(English)	CRB2045
	19	Installation Manual(English)	CRB2046
*	20	Registration Card	CRY1229
*	21	Caution Card	CRN1079
	22	Antenna Assy	CXC4683

2.2 EXTERIOR

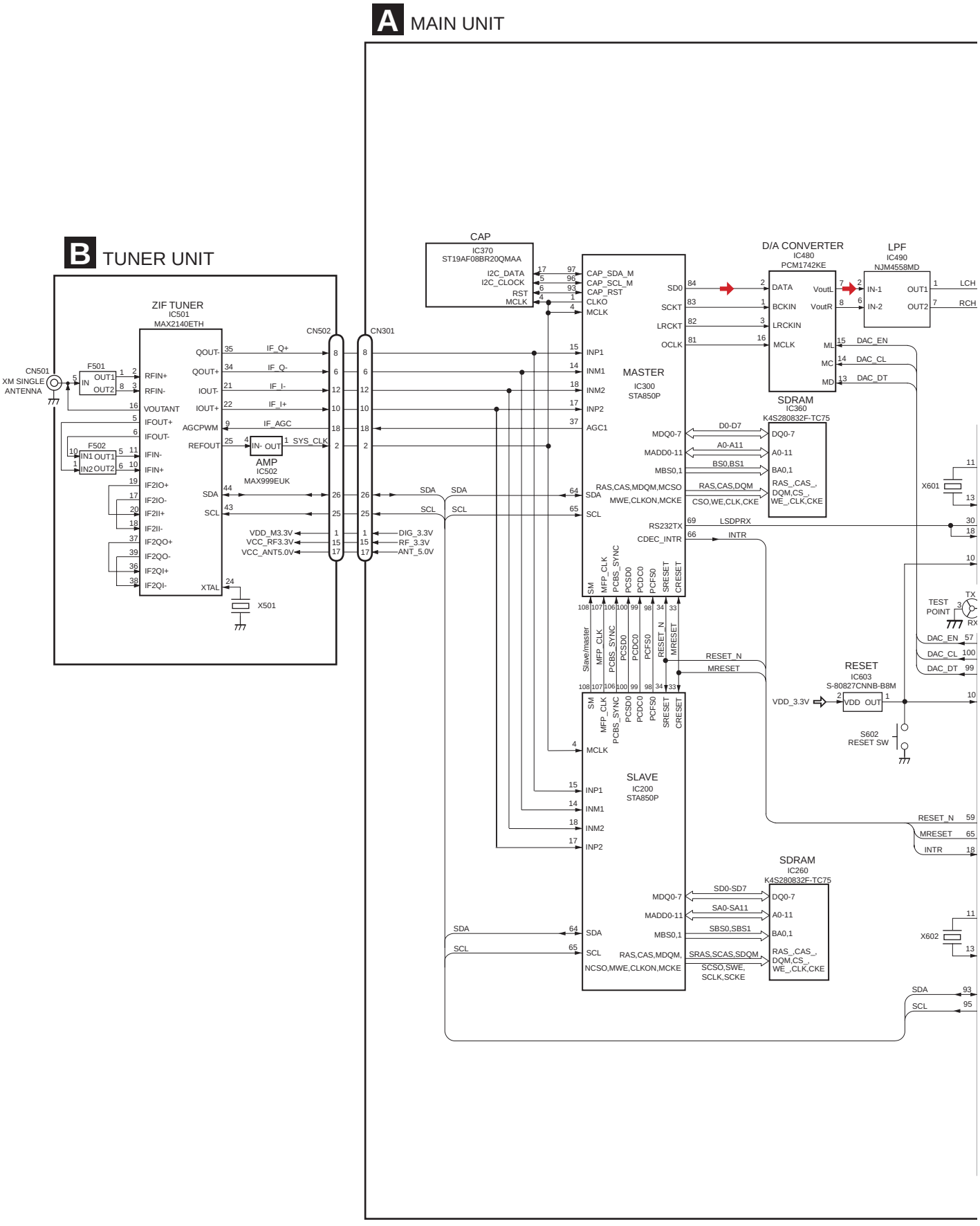


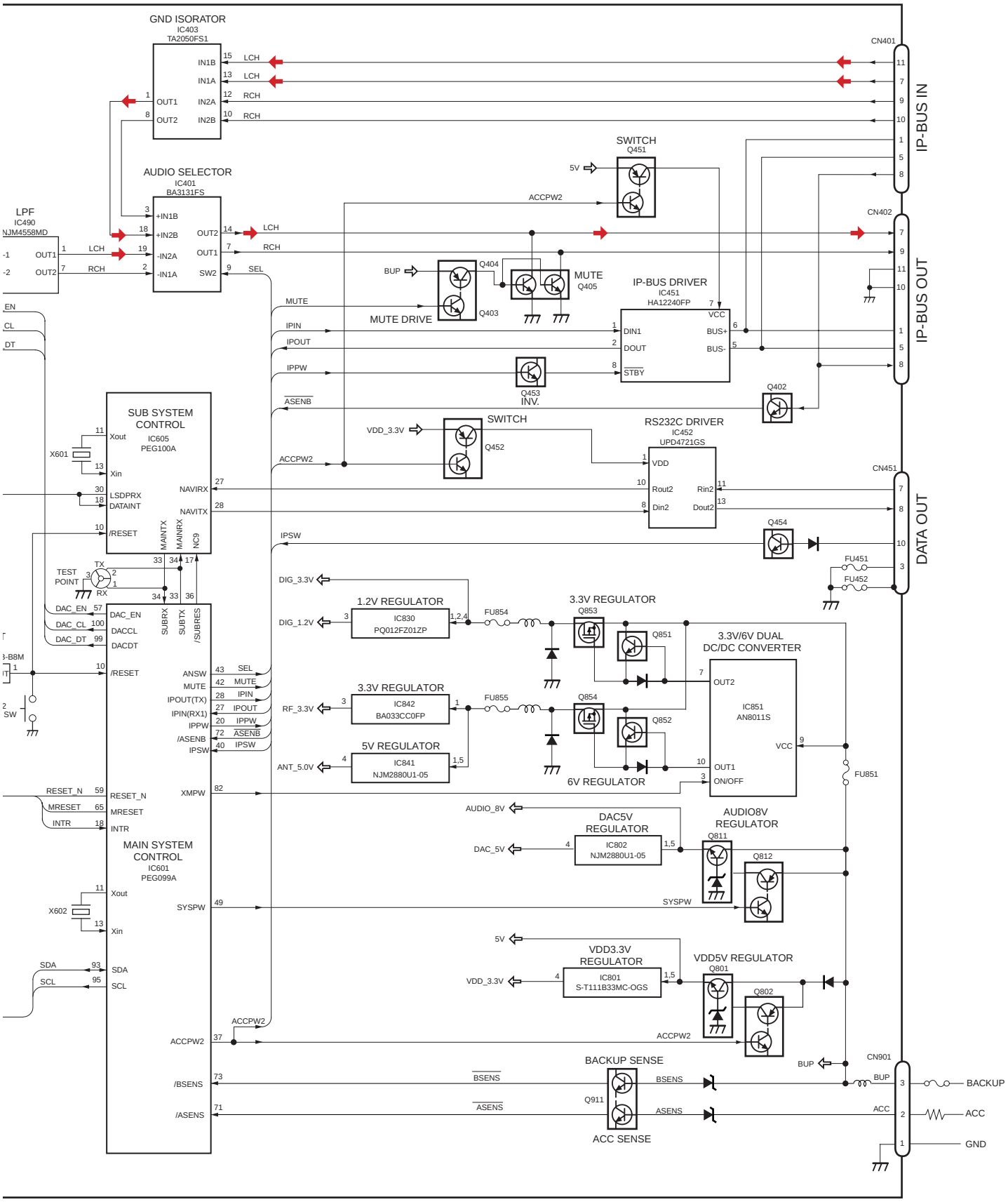
EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ26P030FTC
	2	•••••	
	3	Cord Assy	CDE8009
⚠	4	Fuse(2A)	CEK1018
	5	Cap	CNS6329
	6	•••••	
	7	Chassis	CNA2807
	8	Case	CNB3106
	9	Insulator	CNM9419
	10	•••••	
	11	Main Unit	CWM9857
	12	Terminal(CN603)	CKF1064
	13	Plug(CN901)	CKS-460
	14	Connector(CN402)	CKS3409
	15	Connector(CN401)	CKS3410
	16	Connector(CN451)	CKS4473
	17	Holder	CND2697
	18	Shield	CND2744
	19	Tuner Unit	CWE1933
	20	Connector(CN502)	CKS5145
	21	Connector(CN501)	CKX1085
	22	•••••	
	23	Shield	CND2639
	24	Holder	CND2640
	25	•••••	
	26	Screw	ISS26P055FTC

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

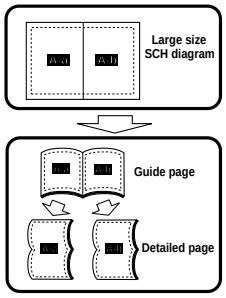
3.1 BLOCK DIAGRAM



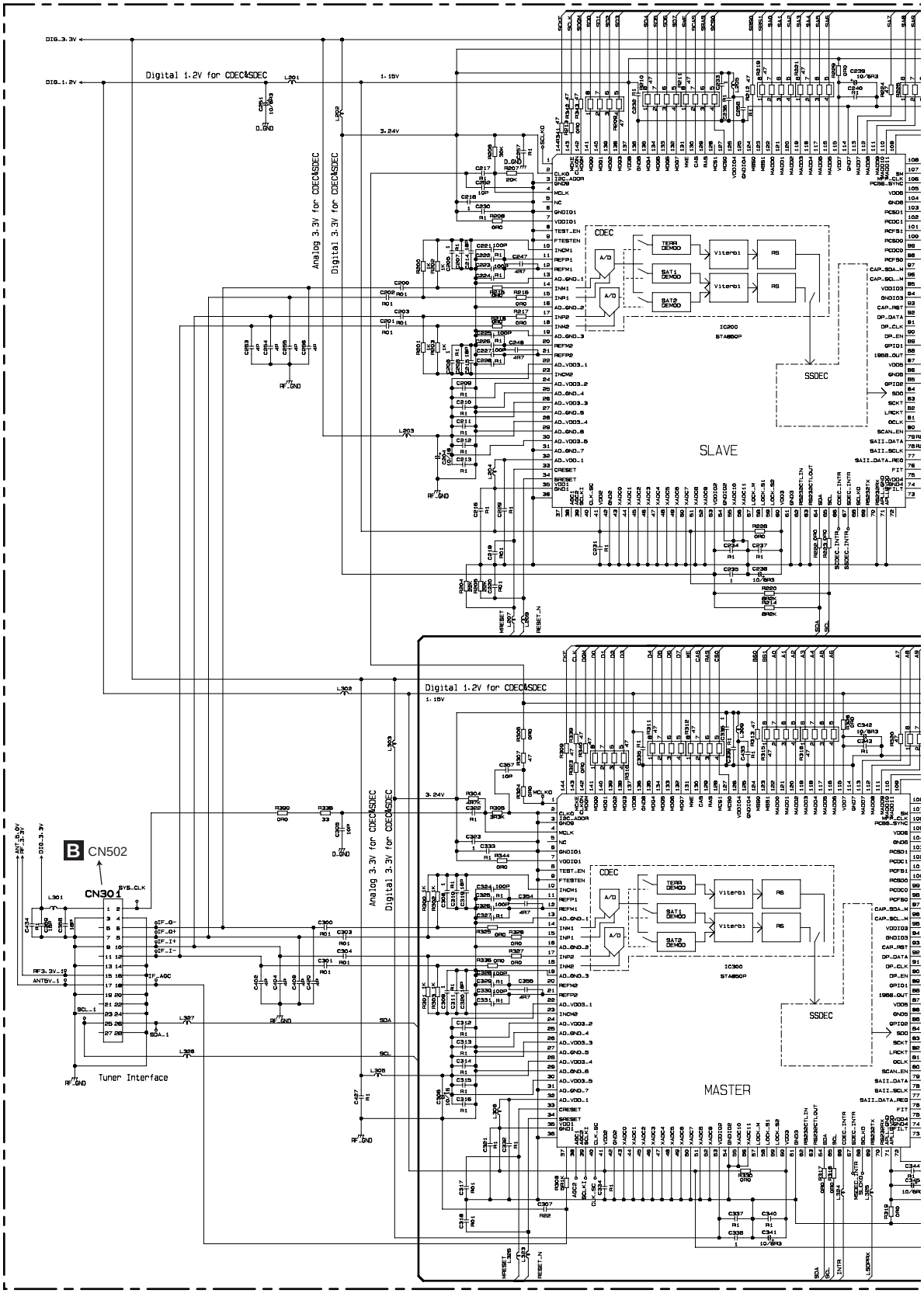

GND ISORATOR
IC403
TA2050FS1
AUDIO SELECTOR
IC401
BA3131FS
LPF
IC490
NJM4558MD
SUB SYSTEM CONTROL
IC605
PEG100A
MAIN SYSTEM CONTROL
IC601
PEG099A
SWITCH
Q451
IP-BUS DRIVER
IC451
HA12240FP
MUTE DRIVE
Q404
Q403
MUTE
Q405
INV.
Q453
SWITCH
Q452
RS232C DRIVER
IC452
UPD4721GS
1.2V REGULATOR
IC830
PQ012FZ01ZP
3.3V REGULATOR
IC842
BA033CC0FP
5V REGULATOR
IC841
NJM2880U1-05
3.3V REGULATOR
Q853
Q851
3.3V/6V DUAL DC/DC CONVERTER
IC851
AN8011S
6V REGULATOR
Q854
Q852
DAC5V REGULATOR
IC802
NJM2880U1-05
AUDIO8V REGULATOR
Q811
Q812
VDD3.3V REGULATOR
IC801
S-T111B33MC-OGS
VDD5V REGULATOR
Q801
Q802
BACKUP SENSE
Q911
ACC SENSE
CN401
IP-BUS IN
CN402
IP-BUS OUT
CN451
DATA OUT
CN901
BACKUP
ACC
GND
LCH
RCH
SEL
MUTE
IPIN
IPOUT
IPPW
ASENB
IPSW
ACCPW2
SYSPW
XMPW
BUP
BSENS
ASENS
5V
DIG_3.3V
DIG_1.2V
RF_3.3V
ANT_5.0V
VDD_3.3V
DAC_5V
AUDIO_8V
X601
X602
FU851
FU852
FU853
FU854
FU855
FU451
FU452

3.2 MAIN UNIT(DSP)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-a 1/2



A1/2

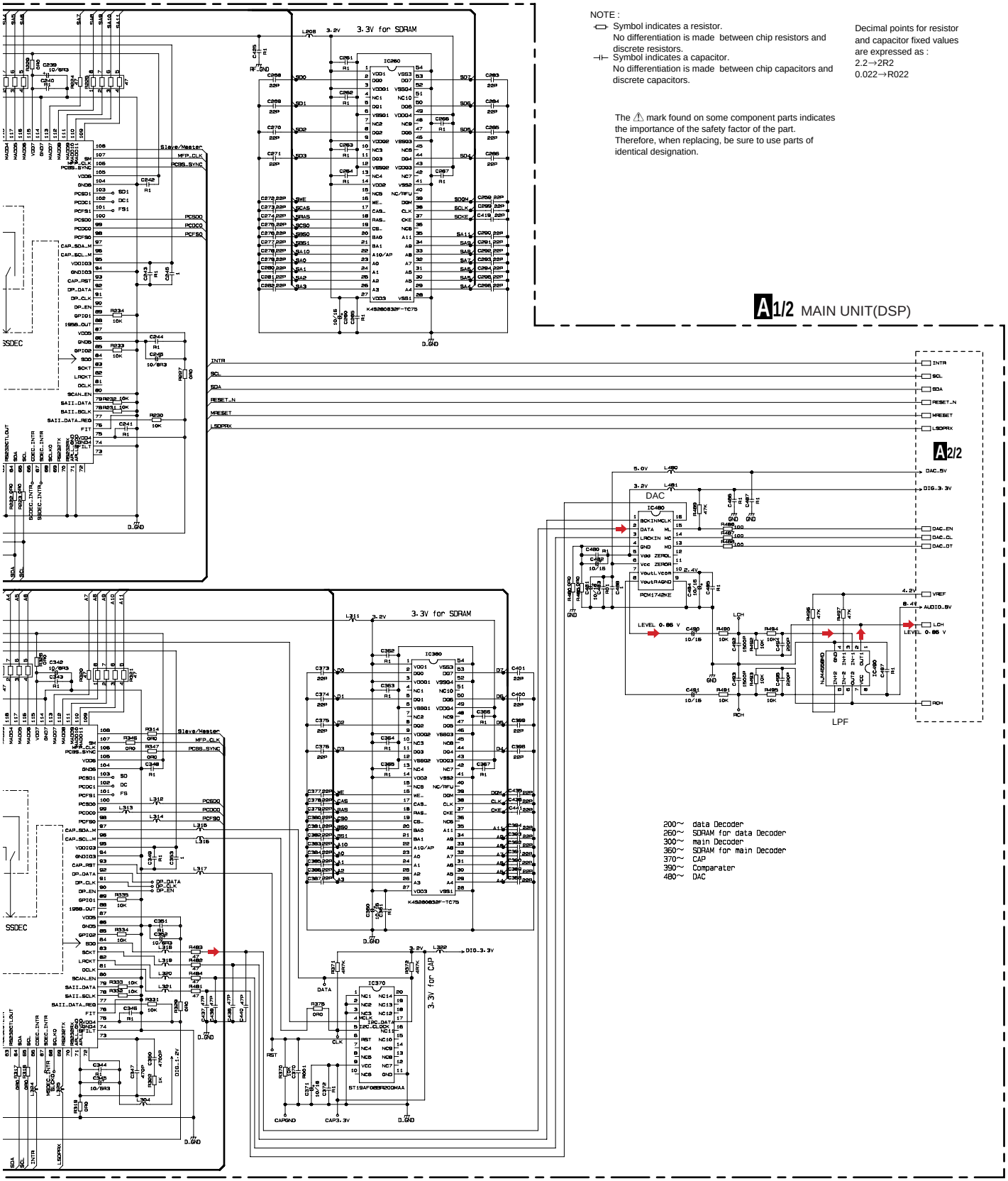
A-b 1/2

NOTE :
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

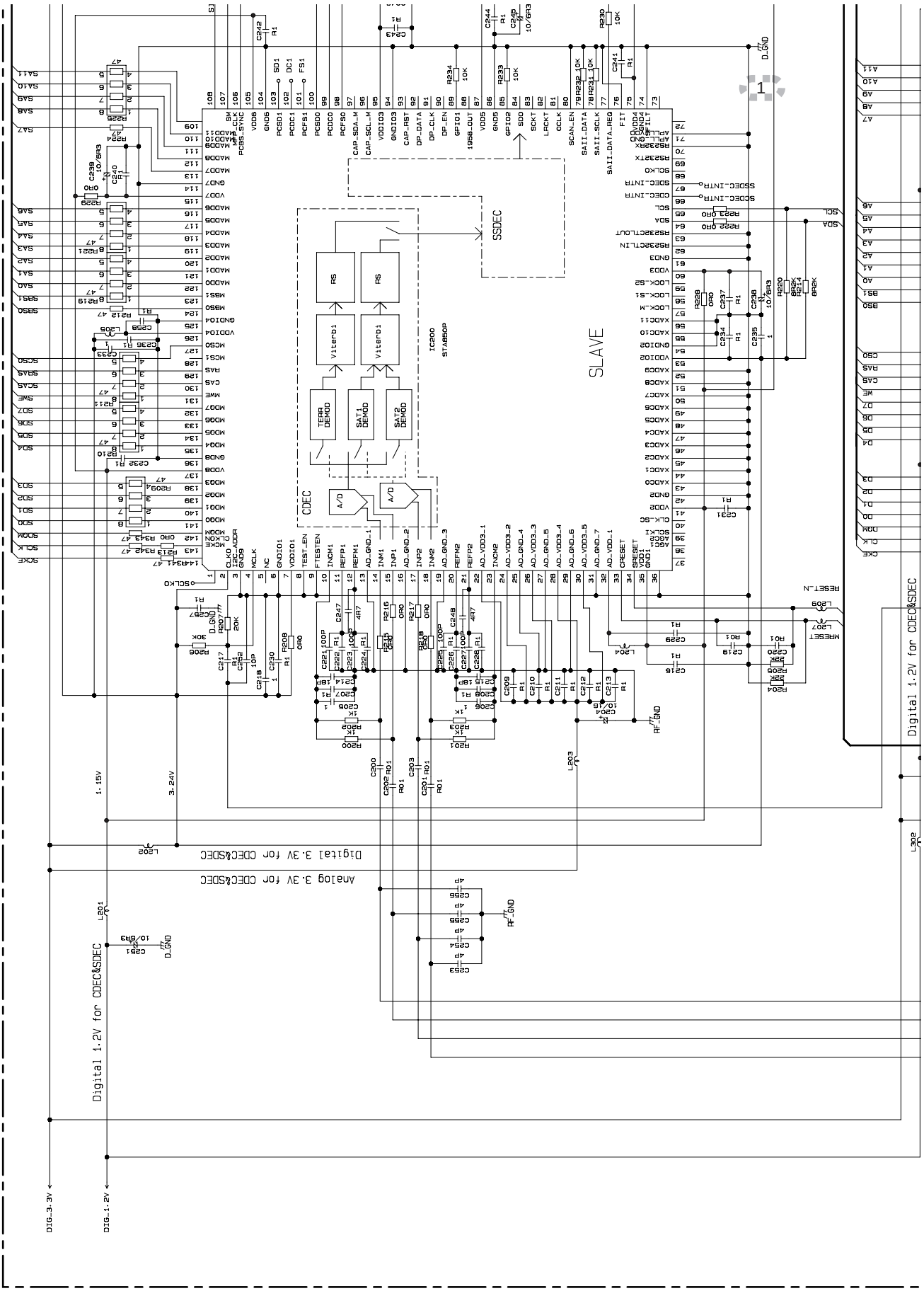
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

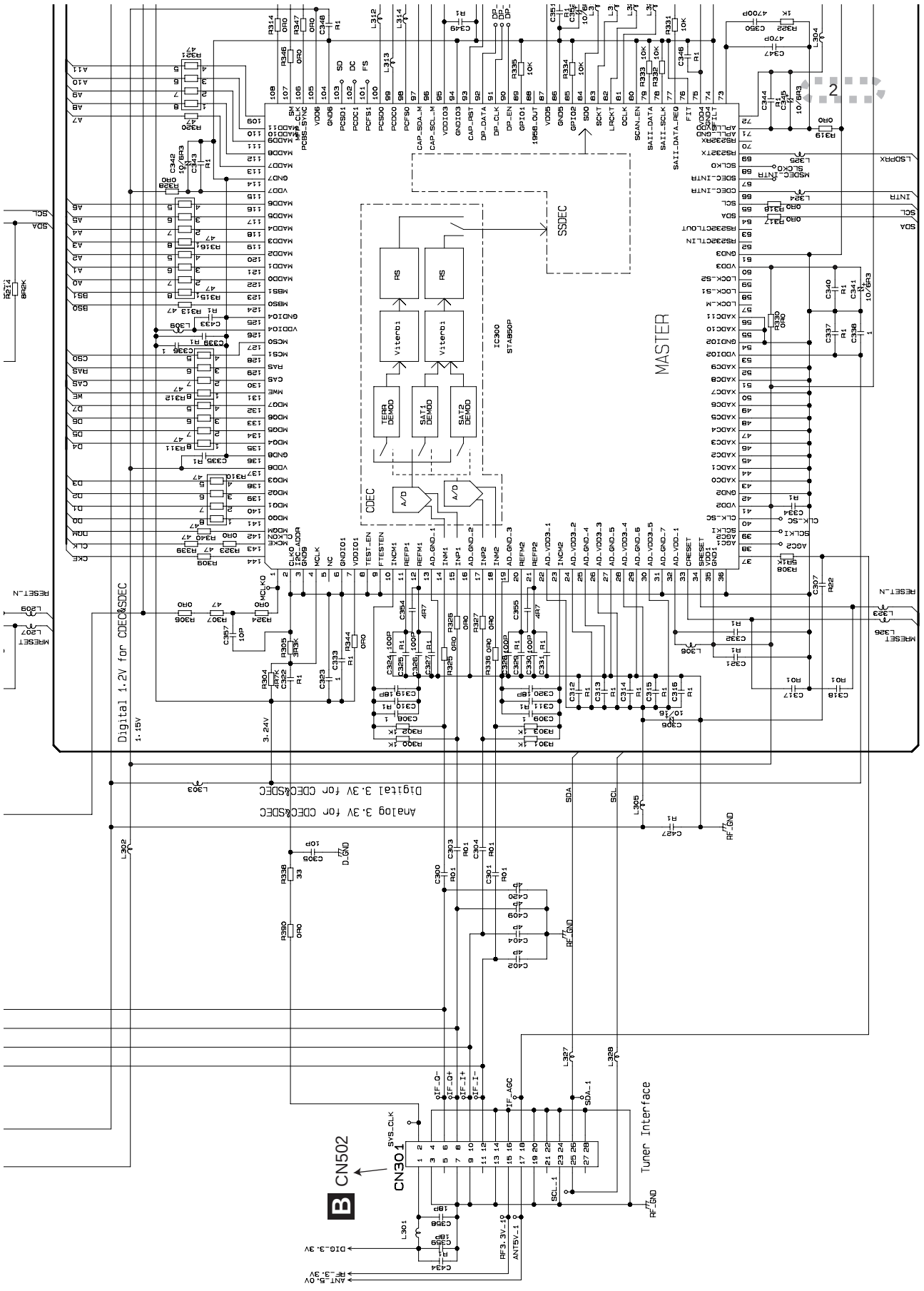
A1/2 MAIN UNIT(DSP)



A1/2


SLAVE
CDEC
SSDEC
IC200
STA850P
Digital 1.2V for CDEC&SDEC
Digital 3.3V for CDEC&SDEC
Analog 3.3V for CDEC&SDEC
1.15V
3.24V
DIG_3.3V
DIG_1.2V
RESET_N
SCLK0
SCL
SDA

A-a A-b


A-b 1/2
A-a 1/2
MASTER
SSDEC
CDEC
IC300
STA850P
Viterbi
RS
TERR DEMOD
SAT1 DEMOD
SAT2 DEMOD
A/D
Digital 1.2V for CDEC&SDEC
Digital 3.3V for CDEC&SDEC
Analog 3.3V for CDEC&SDEC
CN301
CN502
Tuner Interface
RESET_N
SCL
SDA
INTR
LSDATA
LSDPRX
RF_GND
D_GND

NOTE :

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- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

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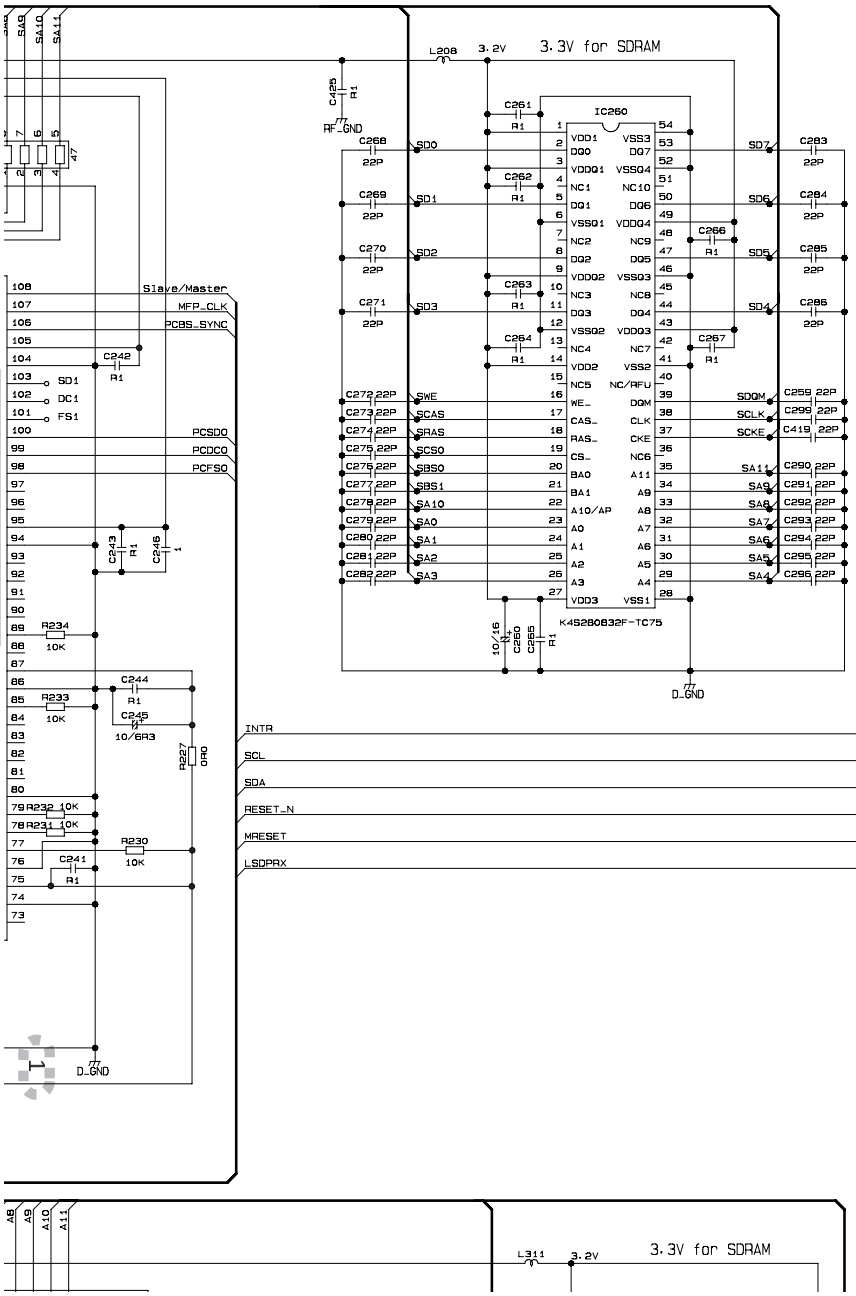
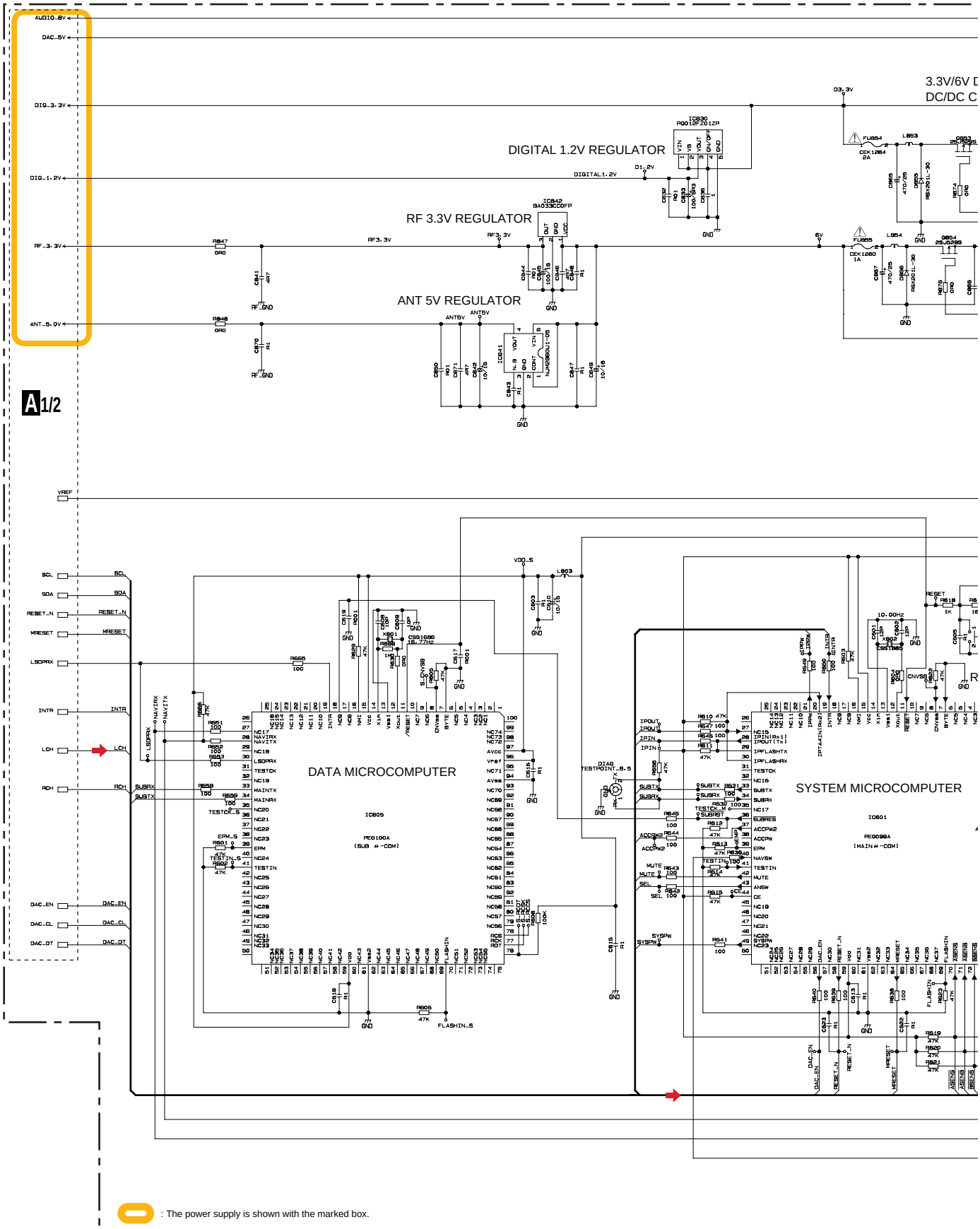
2.2→2R2
0.022→R022



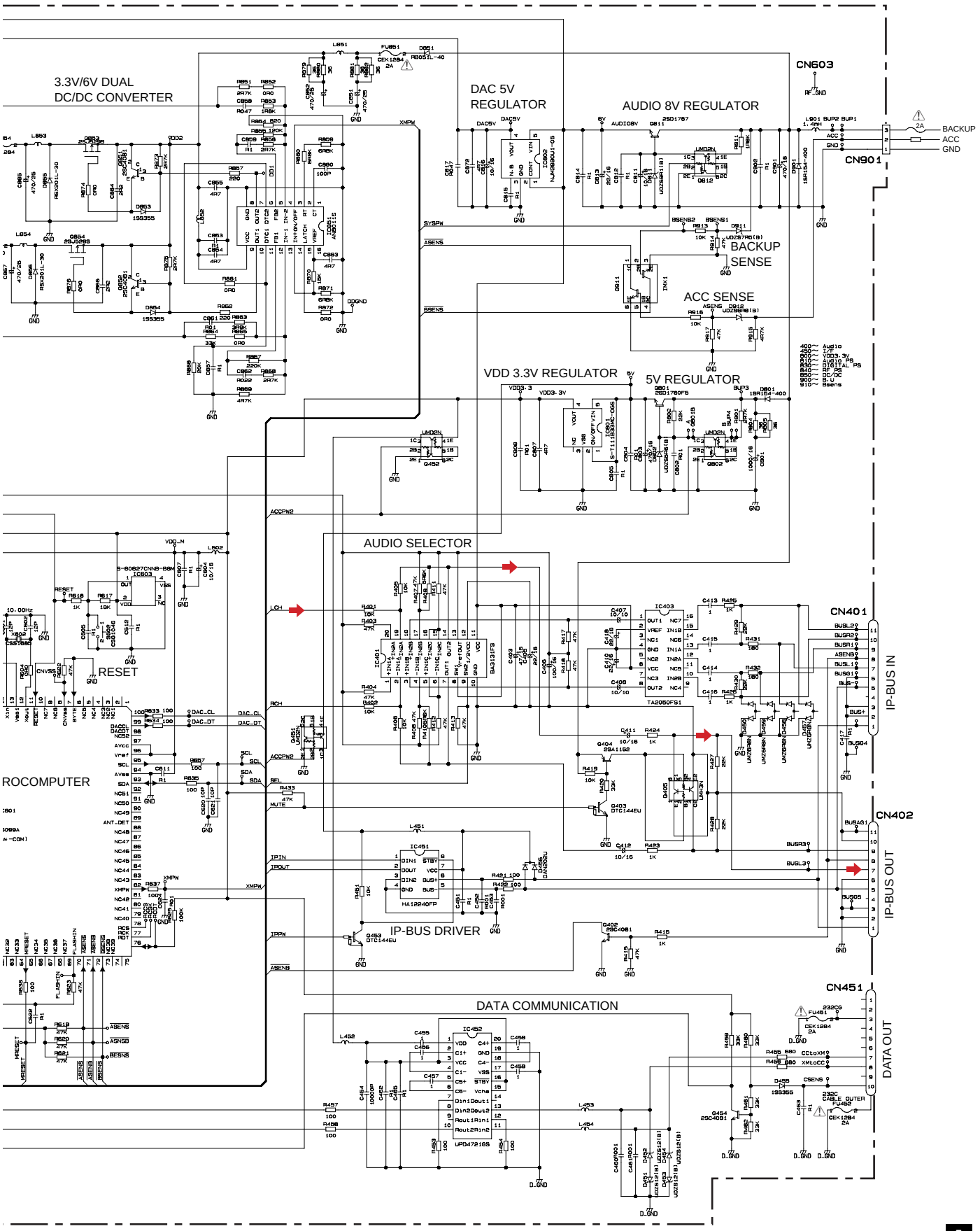
LPF
3.3V for SDRAM
3.3V for CAP
200~ data Decoder
260~ SDRAM for data Decoder
300~ main Decoder
360~ SDRAM for main Decoder
370~ CAP
390~ Comparater
480~ DAC

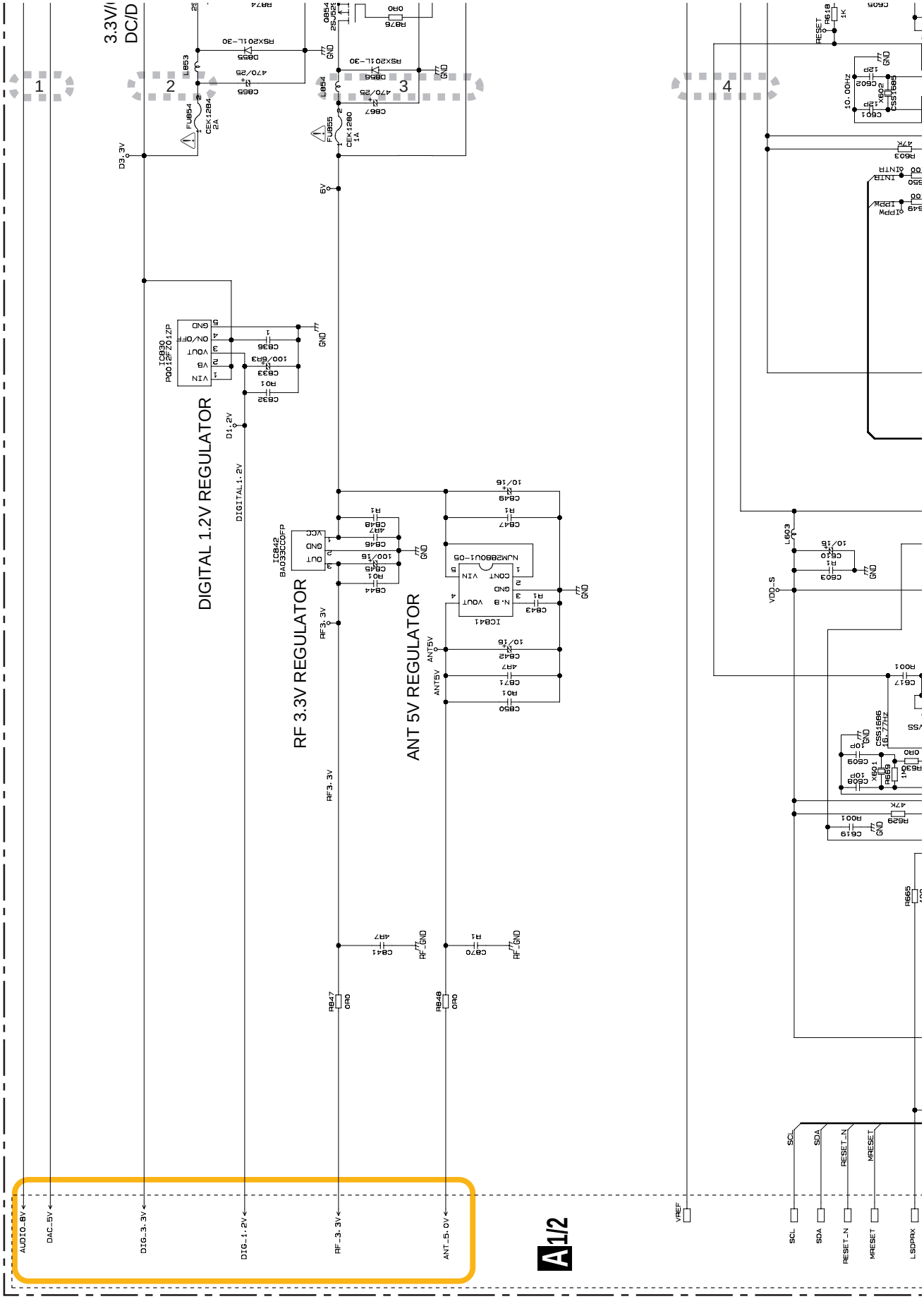
3.3 MAIN UNIT(SYSCOM)

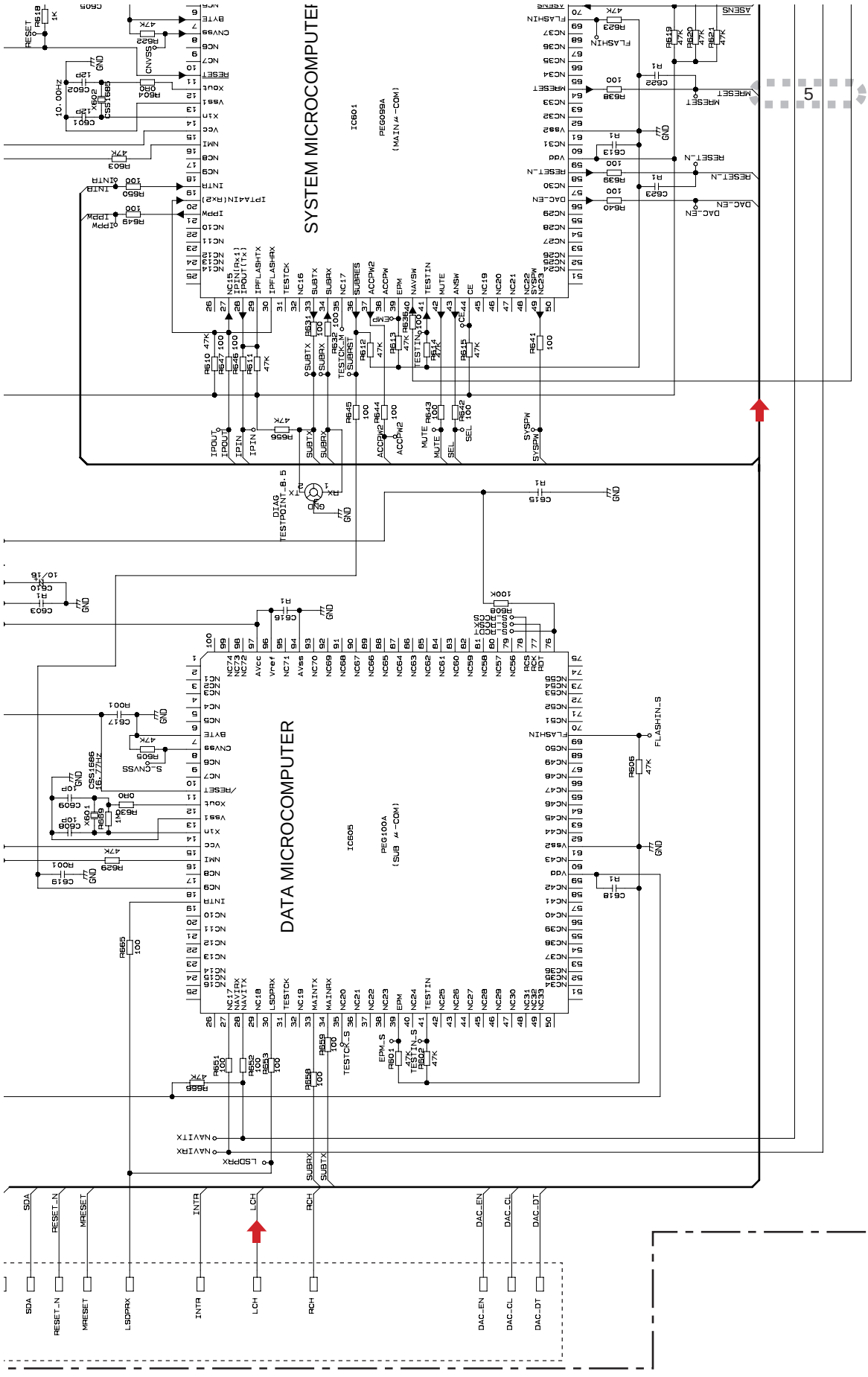
A-a 2/2



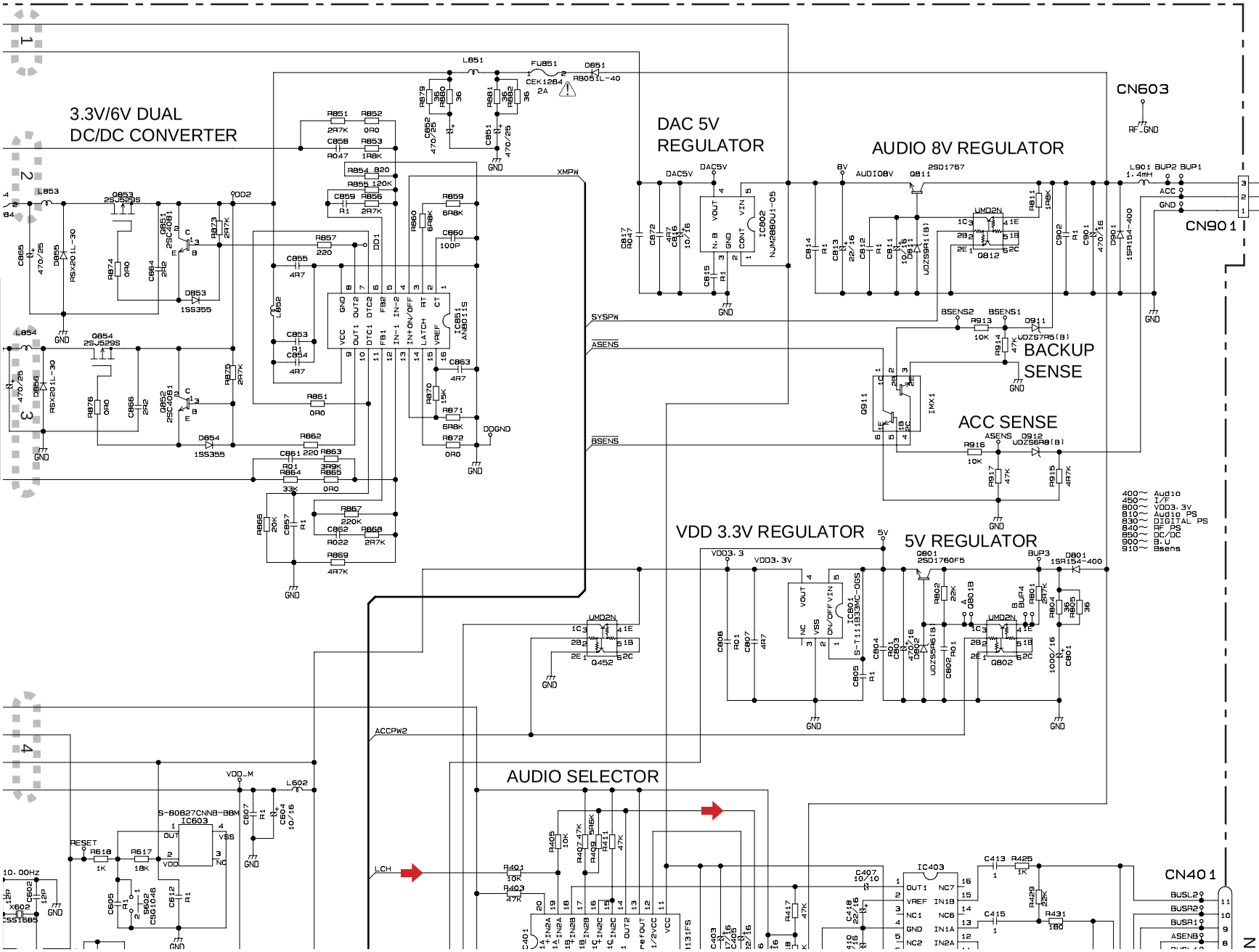
A2/2 MAIN UNIT(SYSCOM)




3.3V/I
DC/D
DIGITAL 1.2V REGULATOR
RF 3.3V REGULATOR
ANT 5V REGULATOR
D3.3V
D1.2V
DIGITAL1.2V
RF3.3V
ANT5V
6V
GND
RESET
SCL
SDA
RESET_N
MRESET
LSIOPRX
VREF
VDD_S
AUDIO_6V
DAC_5V
DIG_3.3V
DIG_1.2V
RF_3.3V
ANT_5.0V
A1/2


SYSTEM MICROCOMPUTER
IC601
PEG099A
(MAIN+COM)
DATA MICROCOMPUTER
IC605
PEG100A
(SUB +COM)
DIAG
TEST POINT_B.5
: The power supply is shown with the marked box.
SDA
RESET_N
MRESET
LSDPRX
INTR
LCH
RCH
DAC_EN
DAC_CL
DAC_DT

A2/2 MAIN UNIT(SYSCOM)

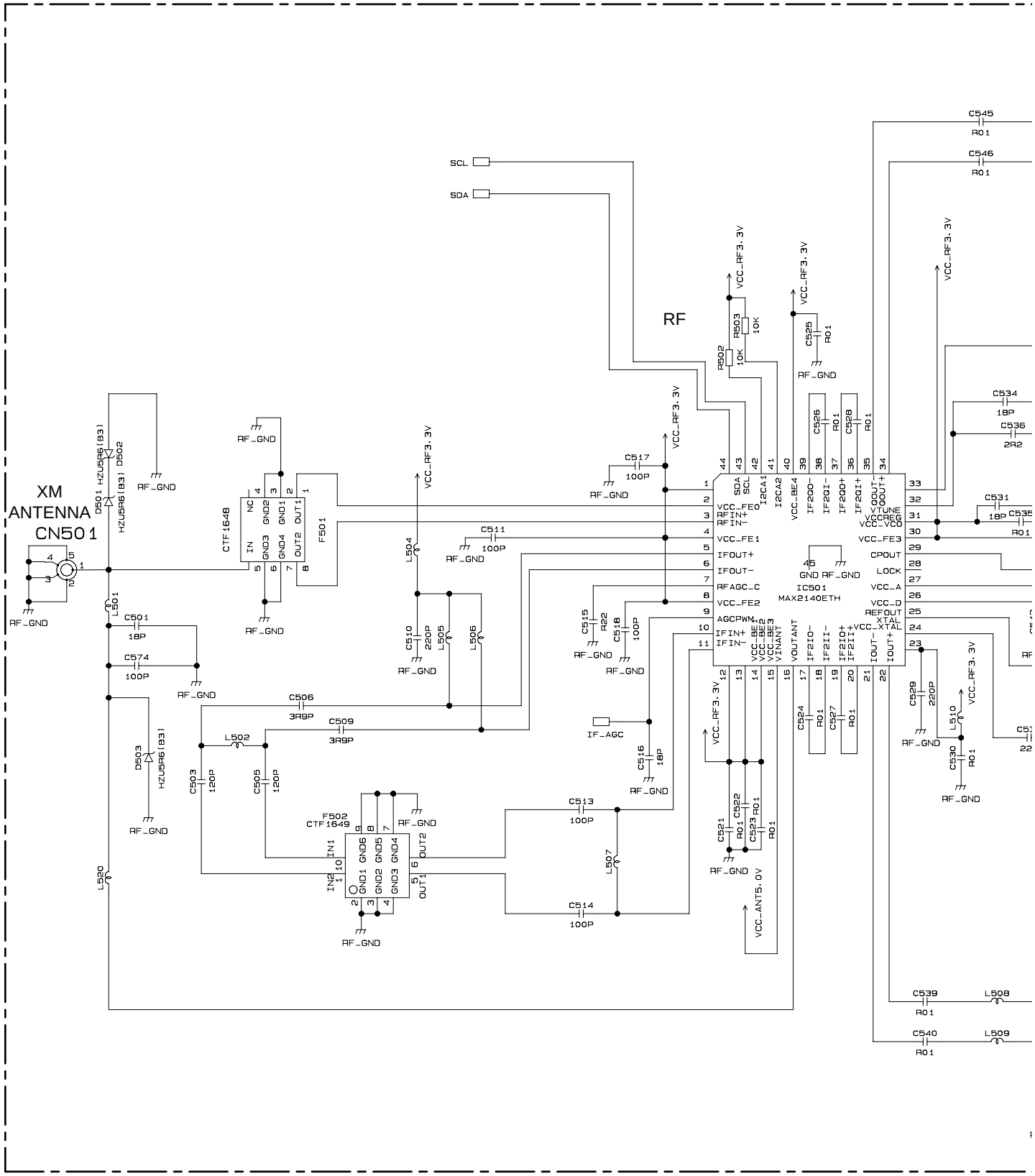


IP-BUS IN
CN401
CN402
IP-BUS OUT
DATA OUT
CN451
DATA COMMUNICATION
IP-BUS DRIVER
RESET
ROCOMPUTER
IC403
TA2050FS1
IC401
BA3131FS
IC451
HA12240FP
IC452
UPD472165
Q403
DTC144EU
Q404
2SA1162
Q402
2SC4081
Q454
2SC4081
D402
DAN202U
D451
UMD2N
D405
UMH3N
D457
UMZ6R8N
D458
UMZ6R8N
D459
UMZ6R8N
D460
UMZ6R8N
D452
UDZS12(B)
D453
UDZS12(B)
D454
UDZS12(B)
D461
1SS355
FU451
FU452
CEK1284
2A
232CG
232C
CABLE OUTER
CCtoXM
XMtoCC
CSENS
LCH
RCH
ACCPW2
SEL
MUTE
IPIN
IPOUT
IPPW
ASENB
DAC_CL
DAC_DT
SCL
SDA
XMPW
MRESET
FLASHIN
ASENS
BSENS
D_GND
GND

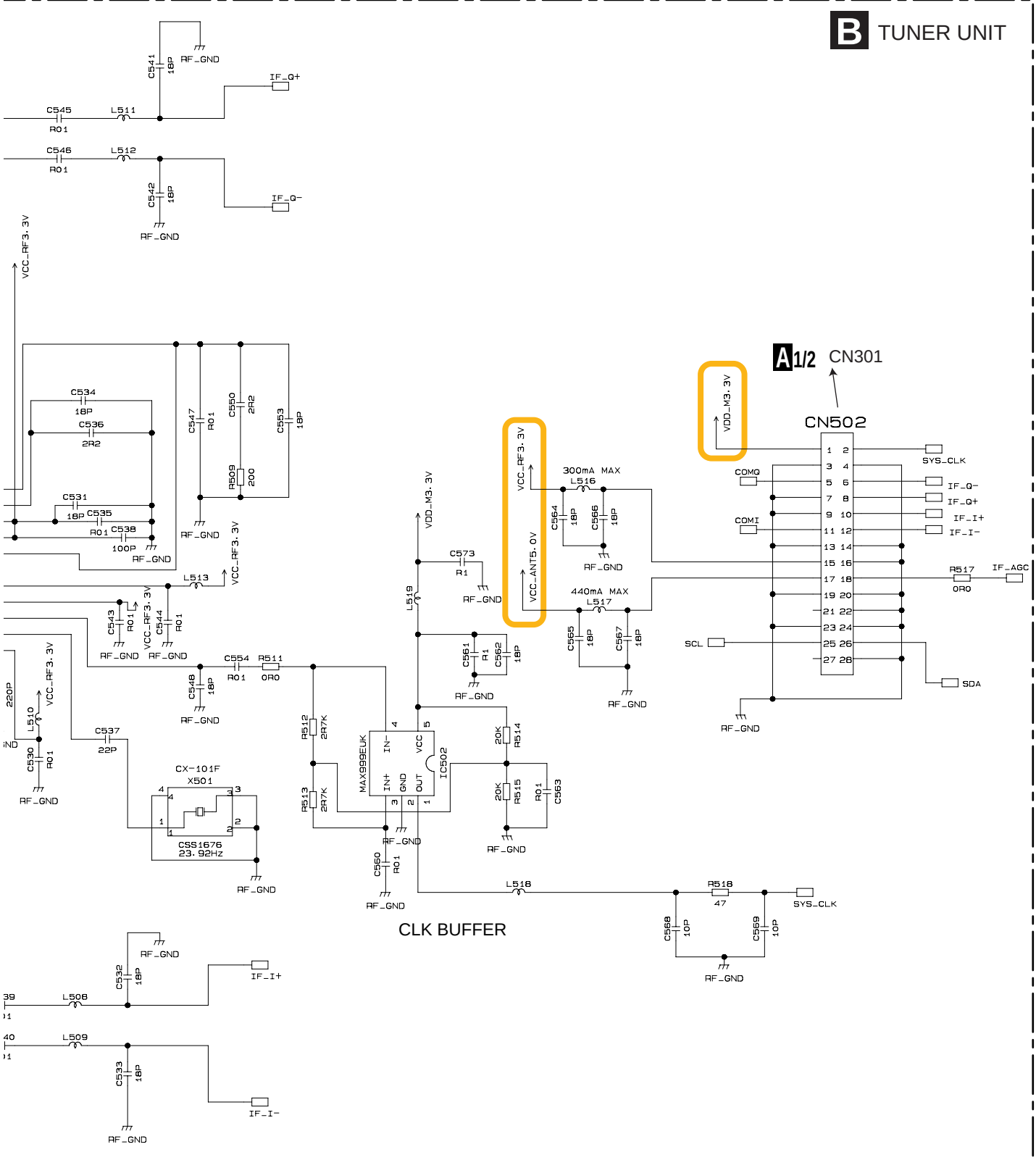
A-a A-b

A-b 2/2

3.4 TUNER UNIT



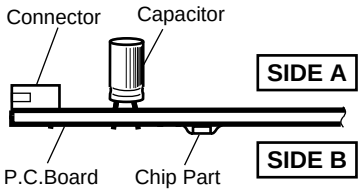
B TUNER UNIT


C541 18P RF_GND
IF_Q+
C545 R01 L511
C546 R01 L512
C542 18P
IF_Q-
RF_GND
VCC_RF3.3V
C534 18P
C536 2R2
C547 R01
C550 2R2
C553 18P
R509 200
C531 18P
C535
C538 R01 100P
RF_GND
L513
VCC_RF3.3V
C543 R01
C544 R01
RF_GND RF_GND
C554 R01
R511 0R0
C548 18P
RF_GND
220P
L510
C530 R01
RF_GND
C537 22P
CX-101F
X501
CSS1676
23.92Hz
RF_GND
R512 2R7K
R513 2R7K
MAX999EUK
IN- IN+ GND VCC OUT
IC502
20K R514
20K R515
R01 C563
RF_GND
RF_GND
C560 R01
RF_GND
VDD_M3.3V
C573 R1
RF_GND
L519
C561 R1
C562 18P
RF_GND
VCC_RF3.3V
VCC_ANT5.0V
300mA MAX
L516
C564 18P
C566 18P
RF_GND
440mA MAX
L517
C565 18P
C567 18P
RF_GND
L518
R518 47
SYS_CLK
C568 10P
C569 10P
RF_GND
CLK BUFFER
A1/2 CN301
CN502
VDD_M3.3V
COMQ
COMI
SCL
SDA
SYS_CLK
IF_Q-
IF_Q+
IF_I+
IF_I-
R517 0R0
IF_AGC
RF_GND
RF_GND
C532 18P
IF_I+
L508
L509
C533 18P
IF_I-
RF_GND

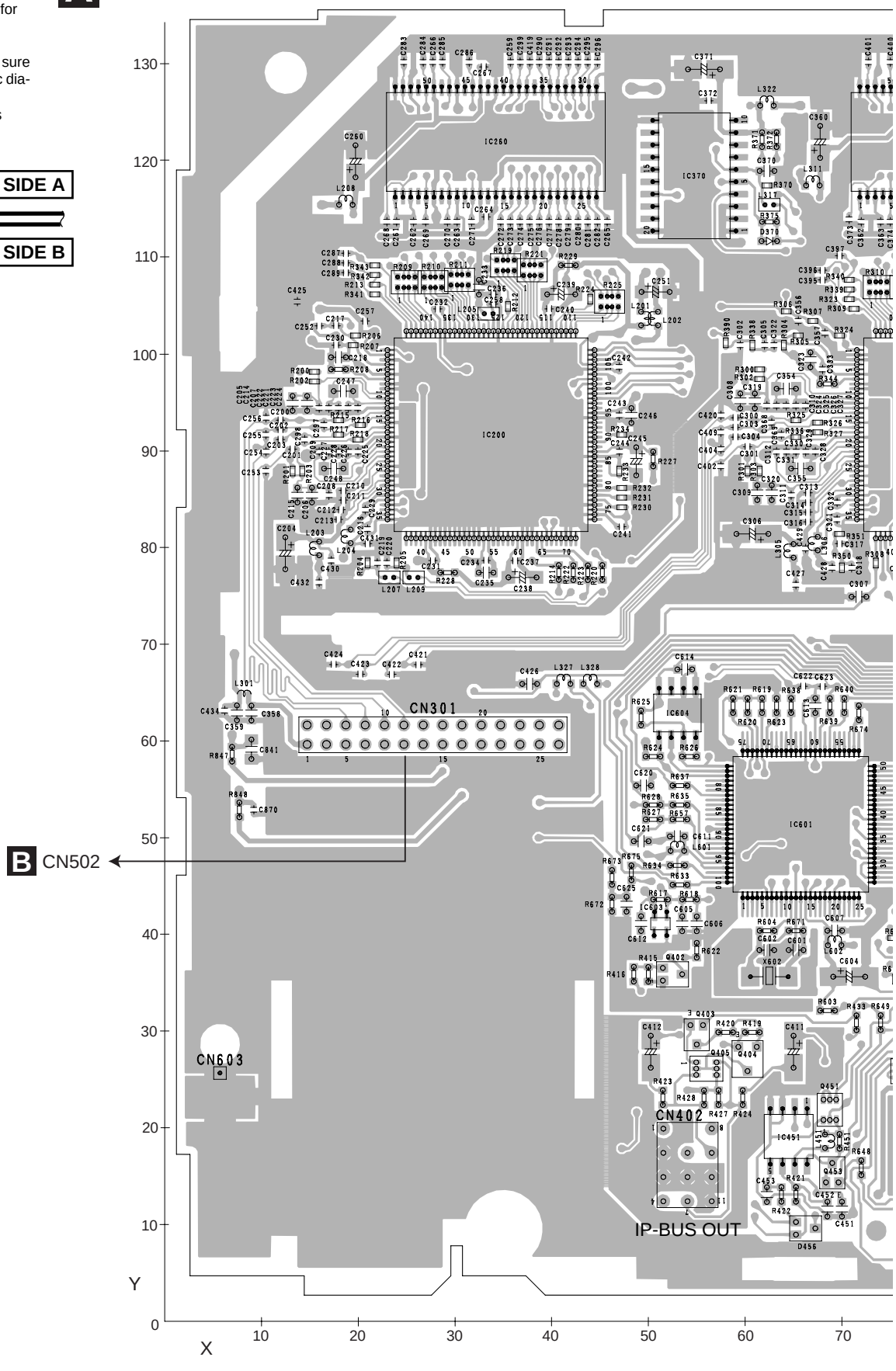
4. PCB CONNECTION DIAGRAM
4.1 MAIN UNIT

NOTE FOR PCB DIAGRAMS

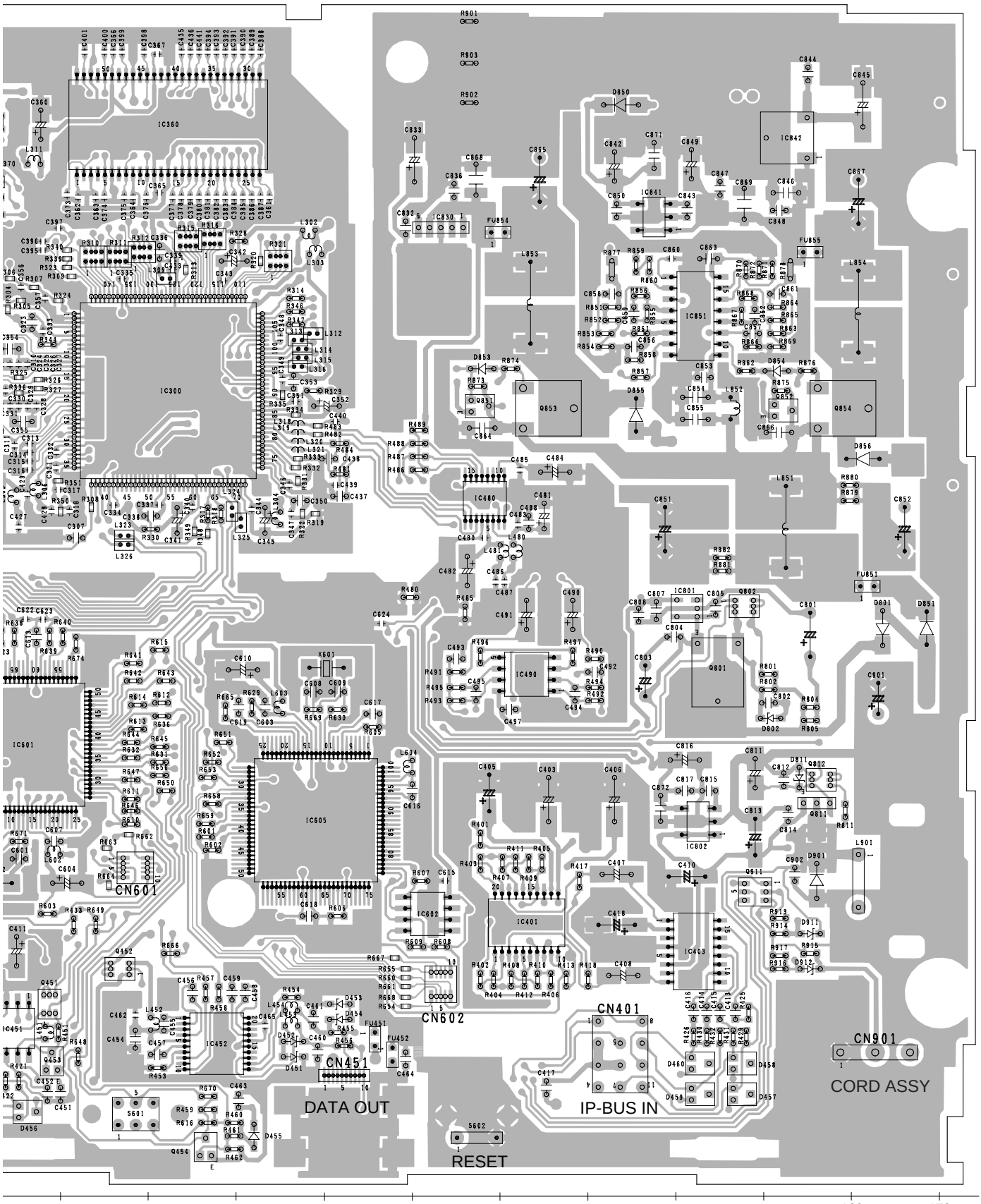
1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



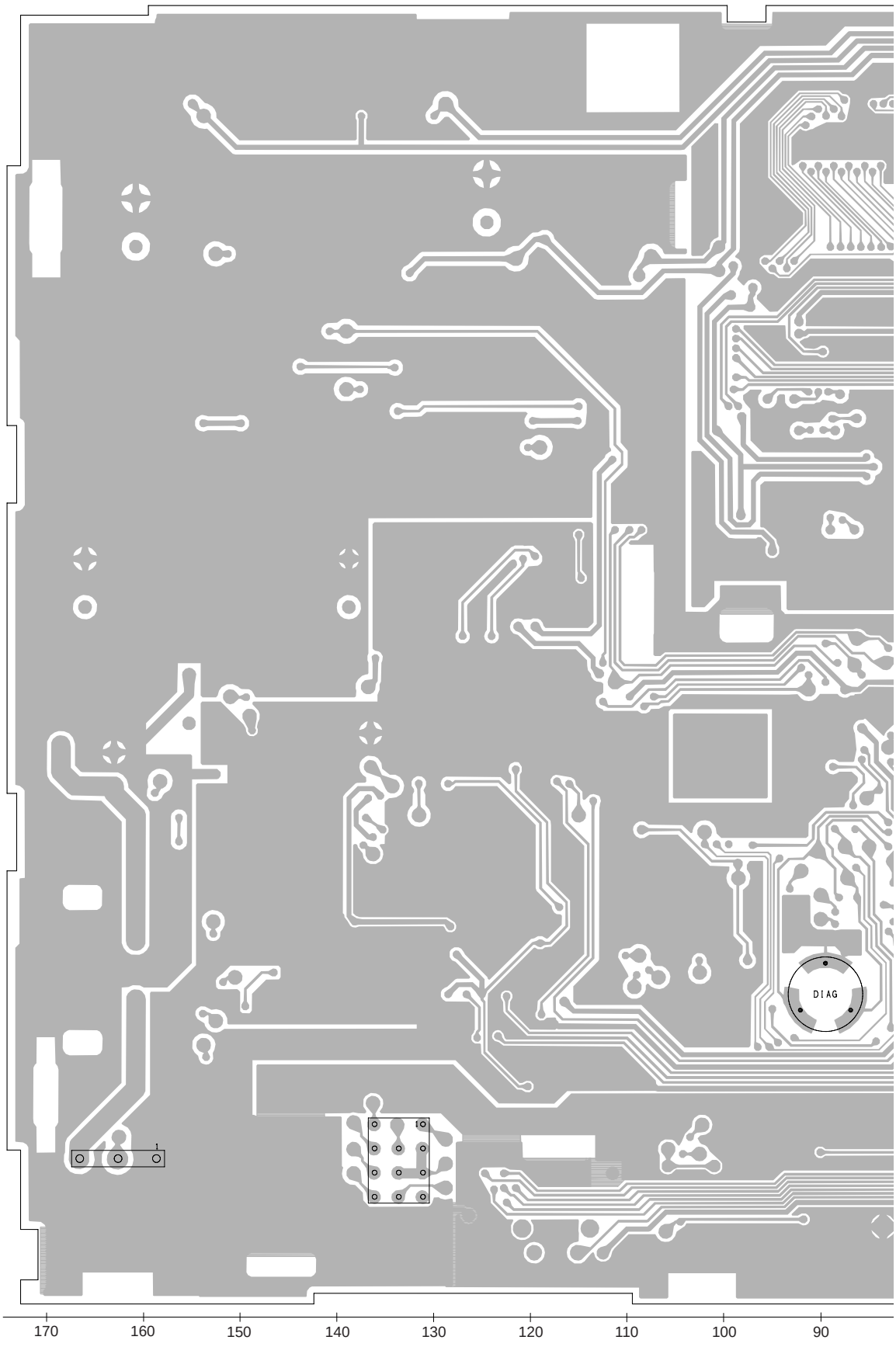
A MAIN UNIT



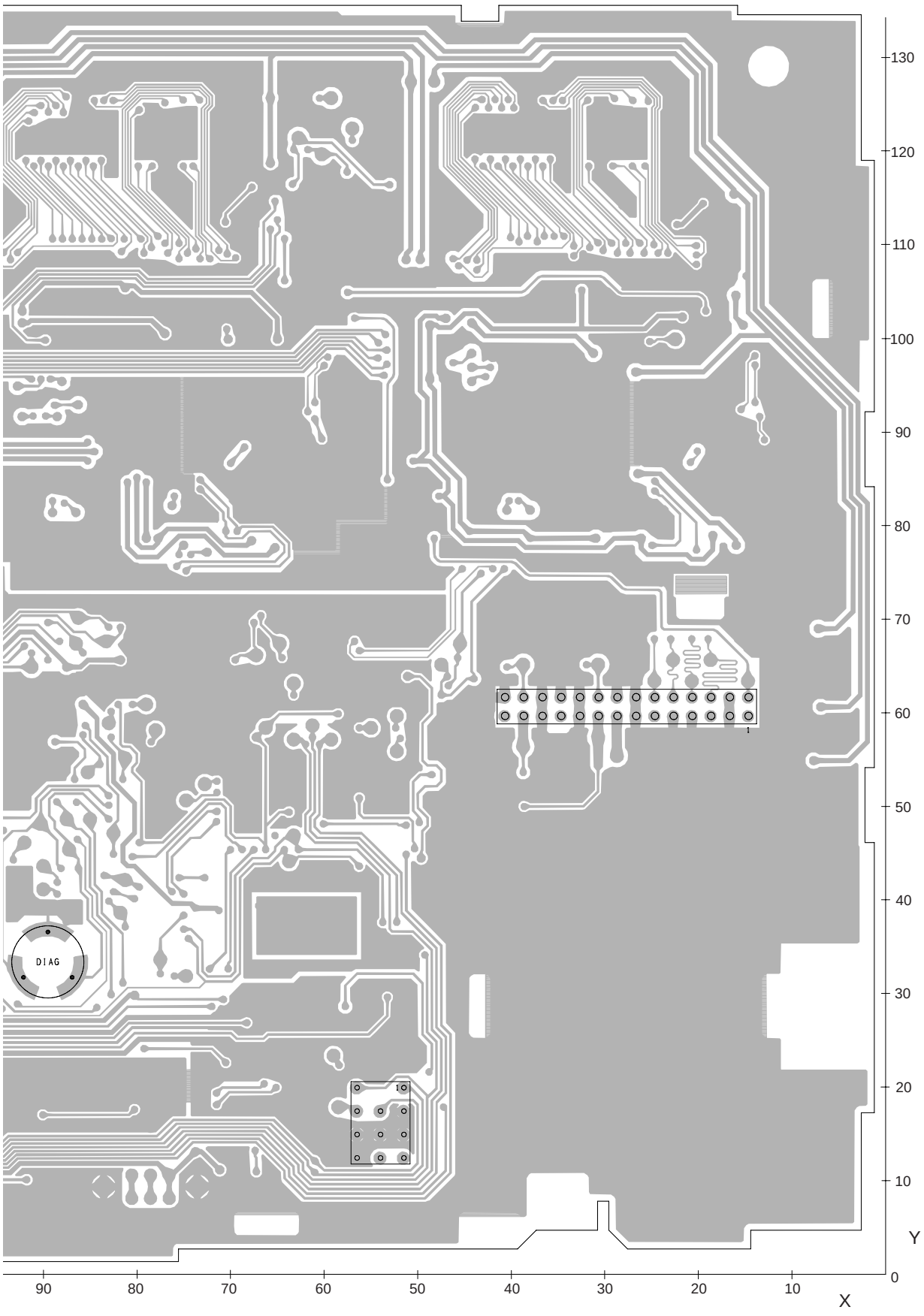
SIDE A


CN601
DATA OUT
CN602
CN451
RESET
S602
CN401
IP-BUS IN
CN901
CORD ASSY
FRONT

A MAIN UNIT



SIDE B

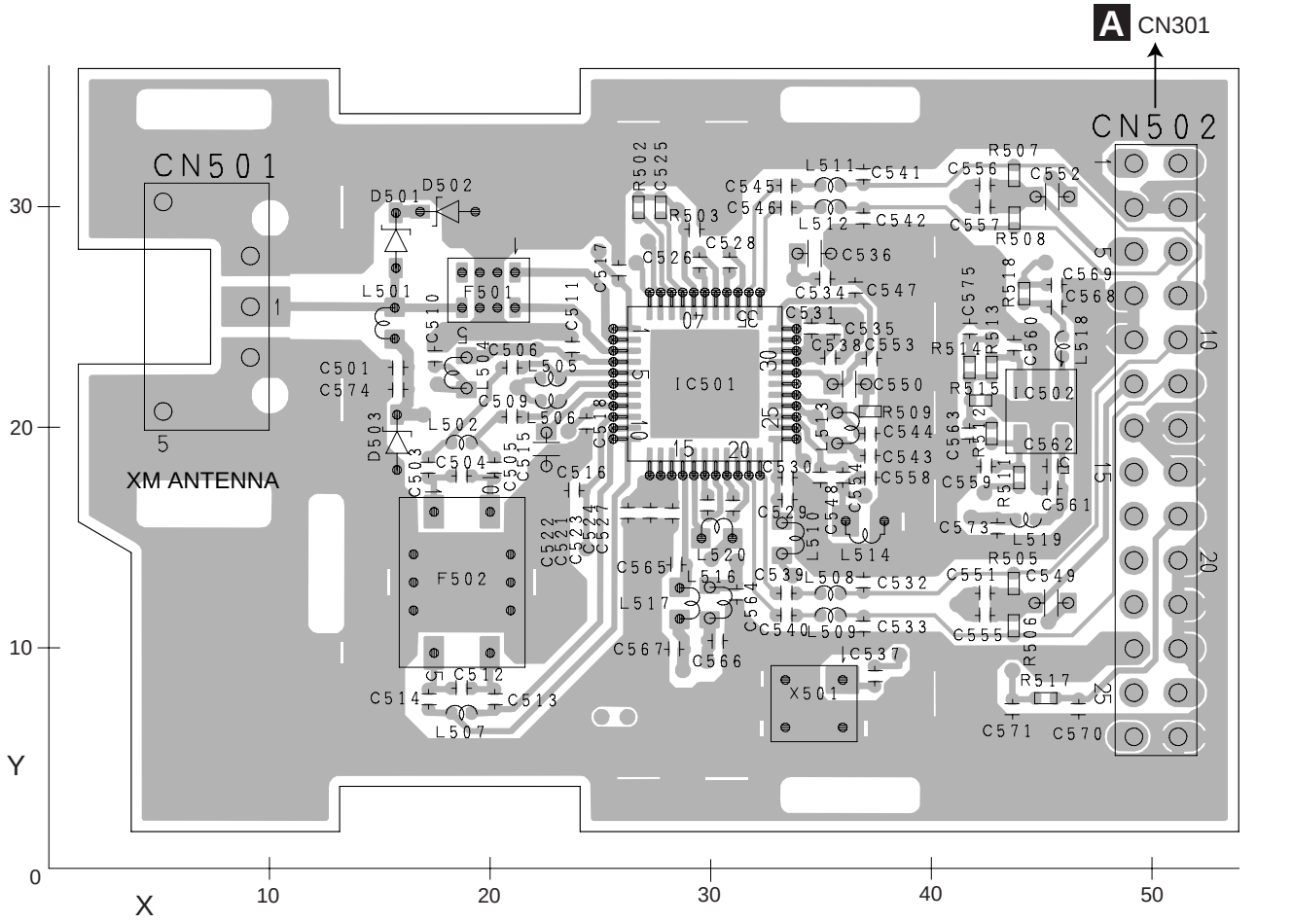


A B C D E F

4.2 TUNER UNIT

B TUNER UNIT

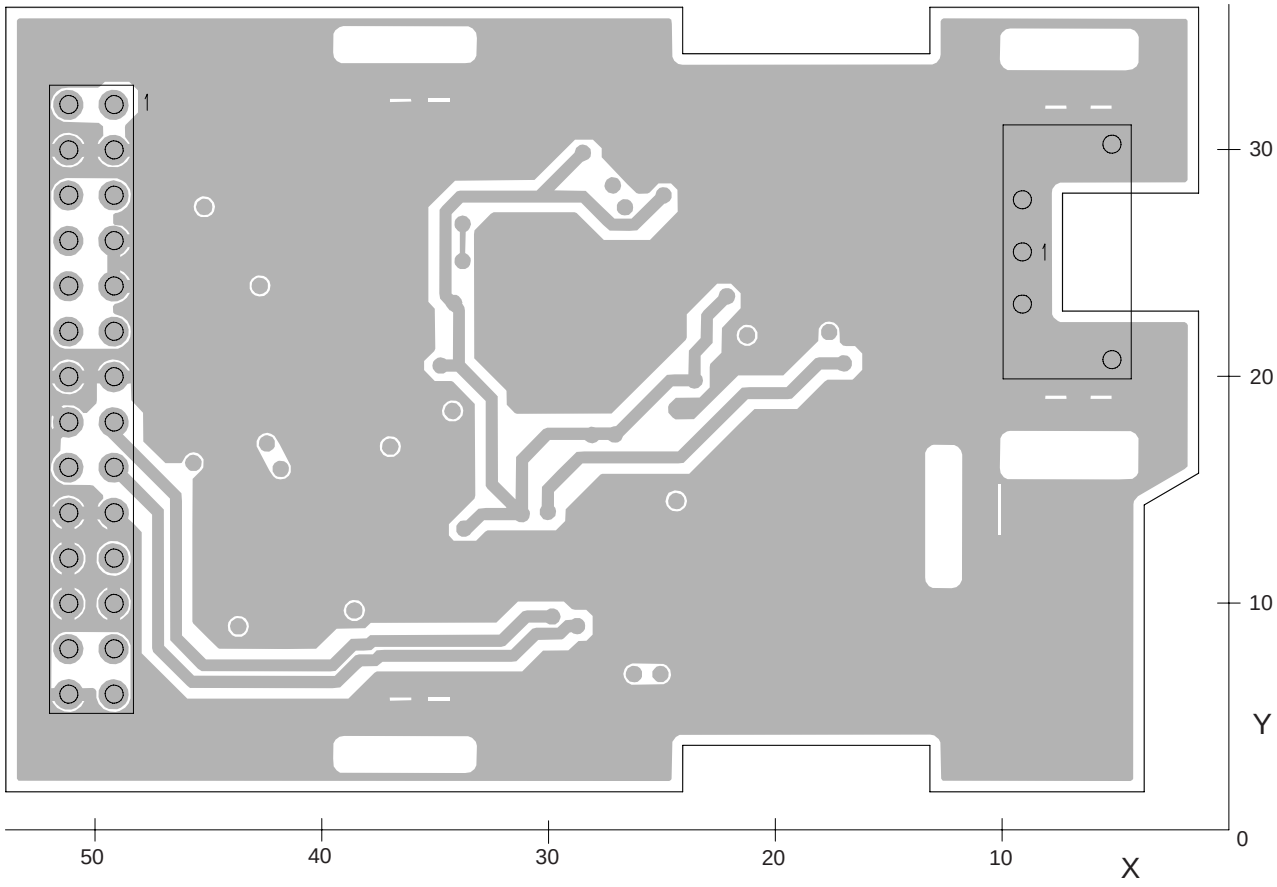
SIDE A



B

B TUNER UNIT

SIDE B



5. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

  Chip Resistor

  RS1/◯S◯◯◯J,RS1/◯◯S◯◯◯J

  Chip Capacitor (except for CQS.....)

  CKS....., CCS....., CSZS.....
- *The ⚠ mark found on some component parts indicatesthe importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Meaning of the figures and others in the parentheses in the parts list.*

  Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

  IC 301 (A, 91, 111) IC NJM2068V

A

Unit Number:CWM9857
Unit Name:Main Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 200	(A,34,92) IC	STA850P
IC 260	(A,34,122) IC	K4S280832F-TC75
IC 300	(A,82,92) IC	STA850P
IC 360	(A,82,122) IC	K4S280832F-TC75
IC 370	(A,55,118) IC	ST19AF08BR20QMAA
IC 401	(A,123,31) IC	BA3131FS
IC 403	(A,142,28) IC	TA2050FS1
IC 451	(A,64,19) IC	HA12240FP
IC 452	(A,88,17) IC	UPD4721GS
IC 480	(A,118,79) IC	PCM1742KE
IC 490	(A,123,59) IC	NJM4558MD
IC 601	(A,66,51) IC	PEG099A
IC 603	(A,51,41) IC	S-80827CNNB-B8M
IC 605	(A,99,43) IC	PEG100A
IC 801	(A,141,67) IC	S-T111B33MC-OGS
IC 802	(A,142,43) IC	NJM2880U1-05
IC 830	(A,113,105) IC	PQ012FZ01ZP
IC 841	(A,137,111) IC	NJM2880U1-05
IC 842	(A,150,120) IC	BA033CC0FP
IC 851	(A,142,100) IC	AN8011S
Q 402	(A,52,36) Transistor	2SC4081
Q 403	(A,55,30) Transistor	DTC144EU
Q 404	(A,60,27) Transistor	2SA1162
Q 405	(A,56,26) Transistor	UMH3N
Q 451	(A,69,22) Transistor	UMD2N
Q 452	(A,77,26) Transistor	UMD2N
Q 453	(A,69,15) Transistor	DTC144EU
Q 454	(A,86,6) Transistor	2SC4081
Q 801	(A,145,58) Transistor	2SD1760F5
Q 802	(A,148,67) Transistor	UMD2N
Q 811	(A,156,43) Transistor	2SD1767
Q 812	(A,156,47) Transistor	UMD2N
Q 851	(A,118,90) Transistor	2SC4081
Q 852	(A,152,89) Transistor	2SC4081
Q 853	(A,127,90) Transistor	2SJ529S
Q 854	(A,161,90) Transistor	2SJ529S
Q 911	(A,149,35) Transistor	IMX1
D 451	(A,96,16) Diode	UDZS12(B)
D 452	(A,96,18) Diode	UDZS12(B)
D 453	(A,102,22) Diode	UDZS12(B)
D 454	(A,102,20) Diode	UDZS12(B)
D 455	(A,92,7) Diode	1SS355
D 456	(A,66,10) Diode	DAN202U
D 457	(A,147,12) Diode	UMZ6R8N
D 458	(A,147,15) Diode	UMZ6R8N
D 459	(A,143,12) Diode	UMZ6R8N
D 460	(A,143,15) Diode	UMZ6R8N
D 801	(A,163,65) Diode	1SR154-400
D 802	(A,151,54) Diode	UDZS5R6(B)
D 811	(A,154,48) Diode	UDZS9R1(B)
D 851	(A,168,65) Diode	RB051L-40
D 853	(A,118,94) Diode	1SS355
D 854	(A,151,94) Diode	1SS355
D 855	(A,135,89) Diode	RSX201L-30
D 856	(A,161,84) Diode	RSX201L-30
D 901	(A,156,36) Diode	1SR154-400
D 911	(A,155,30) Diode	UDZS7R5(B)
D 912	(A,155,26) Diode	UDZS6R8(B)
L 201	(A,49,104) Inductor	CTF1306
L 202	(A,51,104) Inductor	CTF1306
L 203	(A,16,80) Inductor	CTF1306
L 204	(A,19,81) Inductor	CTF1306
L 205	(A,33,104) Ferrite Bead	CTF1528
L 207	(A,23,77) Ferrite Bead	CTF1528
L 208	(A,19,115) Inductor	CTF1306
L 209	(A,26,77) Ferrite Bead	CTF1528
L 301	(A,8,65) Inductor	LCYB27NJ1005
L 302	(A,98,110) Inductor	CTF1306
L 303	(A,99,107) Inductor	CTF1306
L 304	(A,95,77) Inductor	CTF1473
L 305	(A,65,80) Inductor	CTF1306
L 306	(A,67,80) Inductor	CTF1306
L 309	(A,82,104) Ferrite Bead	CTF1528
L 311	(A,67,117) Inductor	CTF1306

Circuit Symbol and No.		Part No.
L 312	(A,99,98) Ferrite Bead	CTF1528
L 313	(A,97,97) Ferrite Bead	CTF1528
L 314	(A,97,96) Ferrite Bead	CTF1528
L 315	(A,97,95) Ferrite Bead	CTF1528
L 316	(A,97,94) Ferrite Bead	CTF1528
L 317	(A,62,115) Ferrite Bead	CTF1528
L 318	(A,97,88) Chip Bead	VTL1128
L 319	(A,97,87) Chip Bead	VTL1128
L 320	(A,97,86) Chip Bead	VTL1128
L 321	(A,97,85) Chip Bead	VTL1128
L 322	(A,62,126) Inductor	CTF1306
L 323	(A,77,75) Ferrite Bead	CTF1528
L 324	(A,89,78) Ferrite Bead	CTF1528
L 325	(A,90,77) Ferrite Bead	CTF1528
L 326	(A,77,74) Ferrite Bead	CTF1528
L 327	(A,41,66) Inductor	CTF1306
L 328	(A,44,66) Inductor	CTF1306
L 451	(A,68,19) Inductor	CTF1473
L 452	(A,80,20) Inductor	CTF1473
L 453	(A,96,19) Inductor	CTF1334
L 454	(A,96,21) Inductor	CTF1334
L 480	(A,121,73) Inductor	CTF1473
L 481	(A,120,73) Inductor	CTF1473
L 602	(A,69,39) Inductor	CTF1473
L 603	(A,95,56) Inductor	CTF1473
L 851	(A,152,76) Inductor	CTH1253
L 852	(A,146,90) Inductor	LCYA100J2520
L 853	(A,123,102) Inductor	CTH1262
L 854	(A,161,101) Inductor	CTH1262
L 901	(A,166,36) Choke Coil 1.4mH	CTH1129
X 601	(A,100,60) Resonator 16.77Hz	CSS1686
X 602	(A,62,36) Resonator 10.00Hz	CSS1685
S 602	(A,117,7) Switch(RESET)	CSG1046
⚠FU451	(A,106,18) Fuse 2A	CEK1284
⚠FU452	(A,108,16) Fuse 2A	CEK1284
⚠FU851	(A,162,69) Fuse 2A	CEK1284
⚠FU854	(A,120,110) Fuse 2A	CEK1284
⚠FU855	(A,155,107) Fuse 1A	CEK1280

RESISTORS

R 200	(A,15,98)	RS1/16SS102J
R 201	(A,13,88)	RS1/16SS102J
R 202	(A,15,97)	RS1/16SS102J
R 203	(A,14,88)	RS1/16SS102J
R 204	(A,21,78)	RS1/16SS223J
R 205	(A,24,78)	RS1/16SS223J
R 206	(A,20,102)	RS1/16SS3002F
R 207	(A,19,101)	RS1/16SS2002F
R 208	(A,18,98)	RS1/16S0R0J
R 209	(A,25,107)	RAB4CQ470J
R 210	(A,28,107)	RAB4CQ470J
R 211	(A,30,108)	RAB4CQ470J
R 212	(A,35,105)	RS1/16SS470J
R 213	(A,22,107)	RS1/16SS0R0J
R 214	(A,41,77)	RS1/16S822J
R 215	(A,18,93)	RS1/16SS0R0J
R 216	(A,20,93)	RS1/16SS0R0J
R 217	(A,18,92)	RS1/16SS0R0J
R 218	(A,20,91)	RS1/16SS0R0J
R 219	(A,35,109)	RAB4CQ470J
R 220	(A,45,77)	RS1/16S822J
R 221	(A,38,109)	RAB4CQ470J
R 222	(A,42,77)	RS1/16S0R0J
R 223	(A,44,77)	RS1/16S0R0J
R 224	(A,44,106)	RS1/16SS470J
R 225	(A,46,105)	RAB4CQ470J
R 227	(A,50,89)	RS1/16S0R0J
R 228	(A,29,77)	RS1/16S0R0J
R 229	(A,42,109)	RS1/16S0R0J
R 230	(A,47,84)	RS1/16SS103J
R 231	(A,47,85)	RS1/16SS103J
R 232	(A,47,86)	RS1/16SS103J
R 233	(A,47,88)	RS1/16SS103J
R 234	(A,47,92)	RS1/16SS103J
R 300	(A,61,98)	RS1/16SS102J
R 301	(A,60,88)	RS1/16SS102J
R 302	(A,61,97)	RS1/16SS102J
R 303	(A,61,88)	RS1/16SS102J
R 304	(A,64,101)	RS1/16SS4701F
R 305	(A,65,102)	RS1/16SS3301F
R 306	(A,64,104)	RS1/16SS0R0J
R 307	(A,67,103)	RS1/16SS470J
R 308	(A,73,78)	RS1/16SS512J
R 309	(A,71,105)	RS1/16SS470J
R 310	(A,74,107)	RAB4CQ470J
R 311	(A,76,107)	RAB4CQ470J
R 312	(A,79,107)	RAB4CQ470J
R 313	(A,84,105)	RS1/16SS470J
R 314	(A,97,102)	RS1/16S0R0J
R 315	(A,84,109)	RAB4CQ470J
R 316	(A,87,109)	RAB4CQ470J
R 317	(A,87,78)	RS1/16S0R0J
R 318	(A,88,78)	RS1/16S0R0J
R 319	(A,99,78)	RS1/16SS0R0J
R 320	(A,93,106)	RS1/16SS470J
R 321	(A,95,106)	RAB4CQ470J
R 322	(A,97,78)	RS1/16SS102J
R 323	(A,71,106)	RS1/16SS0R0J
R 324	(A,70,102)	RS1/16SS0R0J
R 325	(A,65,93)	RS1/16SS0R0J
R 326	(A,67,93)	RS1/16SS0R0J
R 327	(A,67,92)	RS1/16SS0R0J
R 328	(A,90,109)	RS1/16S0R0J
R 329	(A,99,92)	RS1/16S0R0J
R 330	(A,80,76)	RS1/16S0R0J
R 331	(A,97,81)	RS1/16SS103J
R 332	(A,97,83)	RS1/16SS103J
R 333	(A,97,84)	RS1/16SS103J
R 334	(A,97,89)	RS1/16SS103J
R 335	(A,95,91)	RS1/16SS103J
R 336	(A,65,91)	RS1/16SS0R0J
R 338	(A,61,101)	RS1/16SS330J
R 339	(A,71,107)	RS1/16SS470J
R 340	(A,71,108)	RS1/16SS470J
R 341	(A,22,106)	RS1/16SS470J
R 342	(A,22,108)	RS1/16SS470J
R 343	(A,22,109)	RS1/16SS470J
R 344	(A,68,97)	RS1/16S0R0J
R 346	(A,97,101)	RS1/16S0R0J

Circuit Symbol and No.		Part No.	Circuit Symbol and No.		Part No.
R 347	(A,97,99)	RS1/16S0R0J	R 491	(A,115,60)	RS1/16S103J
R 370	(A,62,117)	RS1/16SS103J	R 492	(A,131,56)	RS1/16S103J
R 371	(A,62,122)	RS1/16S472J	R 493	(A,115,56)	RS1/16S103J
R 372	(A,63,122)	RS1/16S472J	R 494	(A,131,58)	RS1/16S103J
R 375	(A,62,114)	RS1/16S0R0J	R 495	(A,115,58)	RS1/16S103J
R 390	(A,58,101)	RS1/16SS0R0J	R 496	(A,118,61)	RS1/16S473J
R 401	(A,118,41)	RS1/16S103J	R 497	(A,128,61)	RS1/16S473J
R 402	(A,118,25)	RS1/16S103J	R 601	(A,86,41)	RS1/16S473J
R 403	(A,118,38)	RS1/16S473J	R 602	(A,87,39)	RS1/16S473J
R 404	(A,119,25)	RS1/16S473J	R 603	(A,68,32)	RS1/16S473J
R 405	(A,125,38)	RS1/16S103J	R 604	(A,62,40)	RS1/16S0R0J
R 406	(A,126,25)	RS1/16S103J	R 605	(A,105,53)	RS1/16S473J
R 407	(A,120,38)	RS1/16S473J	R 606	(A,101,32)	RS1/16S473J
R 408	(A,121,25)	RS1/16S473J	R 608	(A,113,28)	RS1/16S104J
R 409	(A,123,38)	RS1/16S562J	R 610	(A,78,42)	RS1/16S473J
R 410	(A,124,25)	RS1/16S562J	R 611	(A,78,45)	RS1/16S473J
R 411	(A,122,38)	RS1/16S473J	R 612	(A,81,56)	RS1/16S473J
R 412	(A,123,25)	RS1/16S473J	R 613	(A,79,53)	RS1/16S473J
R 413	(A,127,25)	RS1/16S473J	R 614	(A,79,56)	RS1/16S473J
R 415	(A,50,36)	RS1/16S473J	R 615	(A,81,62)	RS1/16S473J
R 416	(A,48,36)	RS1/16S102J	R 617	(A,51,44)	RS1/16S183J
R 417	(A,129,36)	RS1/16S473J	R 618	(A,54,44)	RS1/16S102J
R 418	(A,130,25)	RS1/16S473J	R 619	(A,62,64)	RS1/16S473J
R 419	(A,61,30)	RS1/16S103J	R 620	(A,60,64)	RS1/16S473J
R 420	(A,58,30)	RS1/16S333J	R 621	(A,59,64)	RS1/16S473J
R 421	(A,65,13)	RS1/16S101J	R 622	(A,55,38)	RS1/16S473J
R 422	(A,64,13)	RS1/16S101J	R 623	(A,63,64)	RS1/16S473J
R 423	(A,51,23)	RS1/16S102J	R 625	(A,49,62)	RS1/16S104J
R 424	(A,60,23)	RS1/16S102J	R 629	(A,92,56)	RS1/16S473J
R 425	(A,148,21)	RS1/16S102J	R 630	(A,101,55)	RS1/16S0R0J
R 426	(A,142,18)	RS1/16S102J	R 631	(A,81,49)	RS1/16S101J
R 427	(A,57,23)	RS1/16S223J	R 632	(A,78,50)	RS1/16S101J
R 428	(A,56,23)	RS1/16S223J	R 633	(A,53,45)	RS1/16S101J
R 429	(A,148,18)	RS1/16S223J	R 634	(A,53,47)	RS1/16S101J
R 430	(A,143,18)	RS1/16S223J	R 635	(A,53,53)	RS1/16S101J
R 431	(A,146,18)	RS1/16S181J	R 636	(A,81,55)	RS1/16S101J
R 432	(A,145,18)	RS1/16S181J	R 637	(A,53,55)	RS1/16S101J
R 433	(A,71,31)	RS1/16S473J	R 638	(A,65,64)	RS1/16S101J
R 451	(A,70,19)	RS1/16S103J	R 639	(A,69,64)	RS1/16S101J
R 453	(A,81,15)	RS1/16S101J	R 640	(A,70,64)	RS1/16S101J
R 454	(A,96,23)	RS1/16S101J	R 641	(A,78,61)	RS1/16S101J
R 455	(A,101,19)	RS1/16S681J	R 642	(A,78,59)	RS1/16S101J
R 456	(A,102,17)	RS1/16S681J	R 643	(A,82,59)	RS1/16S101J
R 457	(A,86,23)	RS1/16S101J	R 644	(A,78,52)	RS1/16S101J
R 458	(A,88,23)	RS1/16S101J	R 645	(A,81,51)	RS1/16S101J
R 459	(A,87,10)	RS1/16S333J	R 646	(A,78,44)	RS1/16S101J
R 460	(A,90,8)	RS1/16S333J	R 647	(A,78,47)	RS1/16S101J
R 461	(A,90,7)	RS1/16S333J	R 649	(A,74,31)	RS1/16S101J
R 462	(A,90,5)	RS1/16S333J	R 650	(A,82,46)	RS1/16S101J
R 480	(A,110,68)	RS1/16S0R0J	R 651	(A,88,52)	RS1/16S101J
R 481	(A,102,82)	RS1/16S470J	R 652	(A,87,49)	RS1/16S101J
R 482	(A,99,87)	RS1/16SS470J	R 653	(A,87,48)	RS1/16S101J
R 483	(A,99,88)	RS1/16SS470J	R 656	(A,81,48)	RS1/16S473J
R 484	(A,102,86)	RS1/16S470J	R 657	(A,53,52)	RS1/16S101J
R 485	(A,116,66)	RS1/16S0R0J	R 658	(A,87,45)	RS1/16S101J
R 486	(A,111,83)	RS1/16S101J	R 659	(A,86,42)	RS1/16S101J
R 487	(A,111,84)	RS1/16S101J	R 665	(A,89,55)	RS1/16S101J
R 488	(A,111,86)	RS1/16S101J	R 666	(A,82,28)	RS1/16S473J
R 489	(A,111,87)	RS1/16S473J	R 669	(A,99,55)	RS1/16S105J
R 490	(A,131,61)	RS1/16S103J	R 801	(A,150,59)	RS1/16S272J

Circuit Symbol and No.		Part No.
R 802	(A,150,58)	RS1/16S223J
R 804	(A,155,56)	RS1/16S360J
R 805	(A,155,54)	RS1/16S360J
R 811	(A,159,44)	RS1/16S182J
R 847	(A,7,59)	RS1/16S0R0J
R 848	(A,8,53)	RS1/16S0R0J
R 851	(A,133,101)	RS1/16S2701D
R 852	(A,133,100)	RS1/16S0R0J
R 853	(A,132,98)	RS1/16S1801D
R 854	(A,132,97)	RS1/16S8200D
R 855	(A,137,100)	RS1/16S1203D
R 856	(A,136,102)	RS1/16S2701D
R 857	(A,136,93)	RS1/16S221J
R 859	(A,135,106)	RS1/16S6801D
R 860	(A,137,106)	RS1/16S6801D
R 861	(A,136,98)	RS1/16S0R0J
R 862	(A,148,94)	RS1/16S221J
R 863	(A,151,98)	RS1/16S3901D
R 864	(A,151,101)	RS1/16S3302D
R 865	(A,151,100)	RS1/16S0R0J
R 866	(A,149,97)	RS1/16S2002D
R 867	(A,147,100)	RS1/16S2203D
R 868	(A,148,102)	RS1/16S2701D
R 869	(A,151,97)	RS1/16S4701D
R 870	(A,148,105)	RS1/16S1502D
R 871	(A,151,105)	RS1/16S6801D
R 872	(A,149,105)	RS1/16S0R0J
R 873	(A,117,92)	RS1/16S272J
R 874	(A,121,94)	RS1/16S0R0J
R 875	(A,152,92)	RS1/16S272J
R 876	(A,155,94)	RS1/16S0R0J
R 879	(A,160,79)	RS1/16S360J
R 880	(A,160,81)	RS1/16S360J
R 881	(A,145,71)	RS1/16S360J
R 882	(A,145,73)	RS1/16S360J
R 913	(A,152,32)	RS1/16S103J
R 914	(A,152,30)	RS1/16S473J
R 915	(A,155,28)	RS1/16S472J
R 916	(A,152,26)	RS1/16S103J
R 917	(A,152,27)	RS1/16S473J

CAPACITORS

Circuit Symbol and No.		Part No.
C 200	(A,12,93)	CKSSYB103K16
C 201	(A,13,90)	CKSSYB103K16
C 202	(A,12,92)	CKSSYB103K16
C 203	(A,12,91)	CKSSYB103K16
C 204	(A,12,79)	CEVW100M16
C 205	(A,13,95)	CKSRYB105K6R3
C 206	(A,15,85)	CKSRYB105K6R3
C 207	(A,16,94)	CKSSYB104K10
C 208	(A,17,85)	CKSSYB104K10
C 209	(A,16,90)	CKSSYB104K10
C 210	(A,18,86)	CKSSYB104K10
C 211	(A,18,85)	CKSSYB104K10
C 212	(A,18,84)	CKSSYB104K10
C 213	(A,18,83)	CKSSYB104K10
C 214	(A,15,95)	CCSRCH180J50
C 215	(A,14,85)	CCSRCH180J50
C 216	(A,21,82)	CKSSYB104K10
C 217	(A,18,103)	CKSSYB104K10
C 218	(A,18,100)	CKSRYB105K6R3
C 219	(A,22,78)	CKSSYB103K16
C 220	(A,23,78)	CKSSYB103K16
C 221	(A,18,94)	CCSSCH101J50
C 222	(A,17,94)	CKSSYB104K10
C 223	(A,19,94)	CCSSCH101J50
C 224	(A,20,94)	CKSSYB104K10
C 225	(A,20,90)	CCSSCH101J50
C 226	(A,19,90)	CKSSYB104K10
C 227	(A,17,90)	CCSSCH101J50
C 228	(A,18,90)	CKSSYB104K10
C 229	(A,21,84)	CKSSYB104K10
C 230	(A,18,101)	CKSSYB104K10
C 231	(A,28,79)	CKSSYB104K10
C 232	(A,28,105)	CKSSYB104K10
C 233	(A,32,107)	CKSRYB105K6R3
C 234	(A,33,79)	CKSSYB104K10
C 235	(A,33,77)	CKSRYB105K6R3
C 236	(A,34,106)	CKSSYB104K10
C 237	(A,36,79)	CKSSYB104K10
C 238	(A,37,77)	CSZS100M6R3
C 239	(A,41,106)	CSZS100M6R3
C 240	(A,40,105)	CKSSYB104K10
C 241	(A,47,82)	CKSSYB104K10
C 242	(A,47,99)	CKSSYB104K10
C 243	(A,47,94)	CKSSYB104K10
C 244	(A,47,90)	CKSSYB104K10
C 245	(A,49,89)	CSZS100M6R3
C 246	(A,48,94)	CKSRYB105K6R3
C 247	(A,18,96)	CKSQYB475K6R3
C 248	(A,17,88)	CKSQYB475K6R3
C 251	(A,51,106)	CSZS100M6R3
C 252	(A,16,103)	CCSSCH100D50
C 253	(A,10,88)	CCSSCH4R0C50
C 254	(A,10,90)	CCSSCH4R0C50
C 255	(A,10,92)	CCSSCH4R0C50
C 256	(A,10,93)	CCSSCH4R0C50
C 257	(A,21,103)	CKSSYB104K10
C 258	(A,34,105)	CKSSYB104K10
C 259	(A,36,130)	CCSSCH220J50
C 260	(A,20,120)	CEVW100M16
C 261	(A,24,114)	CKSSYB104K10
C 262	(A,26,114)	CKSSYB104K10
C 263	(A,30,114)	CKSSYB104K10
C 264	(A,33,114)	CKSSYB104K10
C 265	(A,46,114)	CKSSYB104K10
C 266	(A,28,130)	CKSSYB104K10
C 267	(A,33,130)	CKSSYB104K10
C 268	(A,23,114)	CCSSCH220J50
C 269	(A,27,114)	CCSSCH220J50
C 270	(A,29,114)	CCSSCH220J50
C 271	(A,32,114)	CCSSCH220J50
C 272	(A,35,114)	CCSSCH220J50
C 273	(A,36,114)	CCSSCH220J50
C 274	(A,37,114)	CCSSCH220J50
C 275	(A,38,114)	CCSSCH220J50
C 276	(A,39,114)	CCSSCH220J50
C 277	(A,40,114)	CCSSCH220J50
C 278	(A,41,114)	CCSSCH220J50

Circuit Symbol and No.		Part No.	Circuit Symbol and No.		Part No.
C 279	(A,42,114)	CCSSCH220J50	C 345	(A,93,77)	CSZS100M6R3
C 280	(A,43,114)	CCSSCH220J50	C 346	(A,96,81)	CKSSYB104K10
C 281	(A,44,114)	CCSSCH220J50	C 347	(A,96,78)	CKSSYB471K50
C 282	(A,45,114)	CCSSCH220J50	C 348	(A,95,98)	CKSSYB104K10
C 283	(A,25,130)	CCSSCH220J50	C 349	(A,95,93)	CKSSYB104K10
C 284	(A,27,130)	CCSSCH220J50	C 350	(A,97,79)	CKSRYB472K50
C 285	(A,29,130)	CCSSCH220J50	C 351	(A,97,90)	CKSSYB104K10
C 286	(A,31,130)	CCSSCH220J50	C 352	(A,100,90)	CSZS100M6R3
C 290	(A,39,130)	CCSSCH220J50	C 353	(A,96,93)	CKSRYB105K6R3
C 291	(A,40,130)	CCSSCH220J50	C 354	(A,64,96)	CKSQYB475K6R3
C 292	(A,41,130)	CCSSCH220J50	C 355	(A,66,88)	CKSQYB475K6R3
C 293	(A,42,130)	CCSSCH220J50	C 357	(A,68,102)	CCSSCH100D50
C 294	(A,43,130)	CCSSCH220J50	C 358	(A,9,63)	CCSRCH180J50
C 295	(A,44,130)	CCSSCH220J50	C 359	(A,7,63)	CCSRCH180J50
C 296	(A,45,130)	CCSSCH220J50	C 360	(A,68,122)	CEVW100M16
C 299	(A,37,130)	CCSSCH220J50	C 361	(A,94,114)	CKSSYB104K10
C 300	(A,59,93)	CKSSYB103K16	C 362	(A,72,114)	CKSSYB104K10
C 301	(A,60,90)	CKSSYB103K16	C 363	(A,74,114)	CKSSYB104K10
C 303	(A,59,92)	CKSSYB103K16	C 364	(A,78,114)	CKSSYB104K10
C 304	(A,59,91)	CKSSYB103K16	C 365	(A,81,114)	CKSSYB104K10
C 305	(A,62,101)	CCSSCH100D50	C 366	(A,76,130)	CKSSYB104K10
C 306	(A,61,81)	CEVW100M16	C 367	(A,81,130)	CKSSYB104K10
C 307	(A,72,75)	CKSRYB224K10	C 370	(A,62,119)	CKSRYB102K50
C 308	(A,59,95)	CKSRYB105K6R3	C 371	(A,56,129)	CEVW100M16
C 309	(A,61,86)	CKSRYB105K6R3	C 372	(A,56,126)	CKSSYB104K10
C 310	(A,62,95)	CKSSYB104K10	C 373	(A,71,114)	CCSSCH220J50
C 311	(A,65,85)	CKSSYB104K10	C 374	(A,75,114)	CCSSCH220J50
C 312	(A,63,90)	CKSSYB104K10	C 375	(A,77,114)	CCSSCH220J50
C 313	(A,66,86)	CKSSYB104K10	C 376	(A,80,114)	CCSSCH220J50
C 314	(A,66,85)	CKSSYB104K10	C 377	(A,83,114)	CCSSCH220J50
C 315	(A,66,84)	CKSSYB104K10	C 378	(A,84,114)	CCSSCH220J50
C 316	(A,66,83)	CKSSYB104K10	C 379	(A,85,114)	CCSSCH220J50
C 317	(A,70,80)	CKSSYB103K16	C 380	(A,86,114)	CCSSCH220J50
C 318	(A,71,78)	CKSSYB103K16	C 381	(A,87,114)	CCSSCH220J50
C 319	(A,61,95)	CCSRCH180J50	C 382	(A,88,114)	CCSSCH220J50
C 320	(A,63,86)	CCSRCH180J50	C 383	(A,89,114)	CCSSCH220J50
C 321	(A,69,83)	CKSSYB104K10	C 384	(A,90,114)	CCSSCH220J50
C 322	(A,63,101)	CKSSYB104K10	C 385	(A,91,114)	CCSSCH220J50
C 323	(A,67,99)	CKSRYB105K6R3	C 386	(A,92,114)	CCSSCH220J50
C 324	(A,63,95)	CCSSCH101J50	C 387	(A,93,114)	CCSSCH220J50
C 325	(A,64,95)	CKSSYB104K10	C 388	(A,93,130)	CCSSCH220J50
C 326	(A,65,95)	CCSSCH101J50	C 389	(A,92,130)	CCSSCH220J50
C 327	(A,66,95)	CKSSYB104K10	C 390	(A,91,130)	CCSSCH220J50
C 328	(A,67,90)	CCSSCH101J50	C 391	(A,90,130)	CCSSCH220J50
C 329	(A,66,90)	CKSSYB104K10	C 392	(A,89,130)	CCSSCH220J50
C 330	(A,65,90)	CCSSCH101J50	C 393	(A,88,130)	CCSSCH220J50
C 331	(A,64,90)	CKSSYB104K10	C 394	(A,87,130)	CCSSCH220J50
C 332	(A,69,85)	CKSSYB104K10	C 398	(A,79,130)	CCSSCH220J50
C 333	(A,68,98)	CKSSYB104K10	C 399	(A,77,130)	CCSSCH220J50
C 334	(A,76,79)	CKSSYB104K10	C 400	(A,75,130)	CCSSCH220J50
C 335	(A,77,104)	CKSSYB104K10	C 401	(A,73,130)	CCSSCH220J50
C 336	(A,81,107)	CKSRYB105K6R3	C 402	(A,57,88)	CCSSCH4R0C50
C 337	(A,81,79)	CKSSYB104K10	C 403	(A,125,45)	CEVW470M16
C 338	(A,80,77)	CKSRYB105K6R3	C 404	(A,57,90)	CCSSCH4R0C50
C 339	(A,83,106)	CKSSYB104K10	C 405	(A,119,46)	CEVW220M16
C 340	(A,85,78)	CKSSYB104K10	C 406	(A,133,45)	CEVW101M16
C 341	(A,83,77)	CSZS100M6R3	C 407	(A,133,37)	CEVWNP100M10
C 342	(A,90,106)	CSZS100M6R3	C 408	(A,134,25)	CEVWNP100M10
C 343	(A,88,104)	CKSSYB104K10	C 409	(A,57,92)	CCSSCH4R0C50
C 344	(A,92,78)	CKSSYB104K10	C 410	(A,141,36)	CEVW220M16

Circuit Symbol and No.		Part No.
C 411	(A,65,28)	CEVW100M16
C 412	(A,50,28)	CEVW100M16
C 413	(A,147,21) 1µF	CCG1207
C 414	(A,143,21) 1µF	CCG1207
C 415	(A,145,21) 1µF	CCG1207
C 416	(A,142,21) 1µF	CCG1207
C 417	(A,125,12)	CKSRYB104K25
C 418	(A,133,31)	CEVW220M16
C 419	(A,38,130)	CCSSCH220J50
C 420	(A,57,94)	CCSSCH4R0C50
C 425	(A,14,105)	CKSSYB104K10
C 427	(A,65,76)	CKSSYB104K10
C 433	(A,83,105)	CKSSYB104K10
C 434	(A,6,63)	CKSSYB104K10
C 435	(A,84,130)	CCSSCH220J50
C 436	(A,85,130)	CCSSCH220J50
C 437	(A,102,80)	CCSRCH470J50
C 438	(A,100,84)	CCSRCH470J50
C 439	(A,101,81)	CCSSCH470J50
C 440	(A,101,88)	CCSSCH470J50
C 441	(A,86,130)	CCSSCH220J50
C 451	(A,70,12)	CKSRYB104K25
C 452	(A,68,12)	CKSRYB102K50
C 453	(A,62,13)	CKSRYB102K50
C 454	(A,78,18) 10000pF	CCG1171
C 455	(A,82,20) 1µF	CCG1207
C 456	(A,85,23) 1µF	CCG1207
C 457	(A,81,16) 1µF	CCG1207
C 458	(A,91,23) 1µF	CCG1207
C 459	(A,89,23) 1µF	CCG1207
C 460	(A,99,16)	CKSRYB102K50
C 461	(A,99,20)	CKSRYB102K50
C 462	(A,78,21)	CKSSYB104K10
C 463	(A,90,11)	CKSRYB104K25
C 465	(A,93,19)	CKSSYB104K10
C 480	(A,118,75)	CKSSYB104K10
C 481	(A,125,77)	CSZS100M16
C 482	(A,116,71)	CEVW100M16
C 483	(A,122,76)	CKSSYB103K16
C 484	(A,126,82)	CEVW100M16
C 485	(A,122,83)	CKSSYB104K10
C 486	(A,119,70)	CKSSYB104K10
C 487	(A,120,70)	CKSSYB104K10
C 488	(A,123,77)	CKSRYB105K10
C 490	(A,128,66)	CEVW100M16
C 491	(A,123,66)	CEVW100M16
C 492	(A,131,60)	CKSRYB152K50
C 493	(A,115,61)	CKSRYB152K50
C 494	(A,128,57)	CKSRYB221K50
C 495	(A,117,57)	CKSRYB221K50
C 497	(A,121,55)	CKSRYB104K25
C 601	(A,65,38)	CCSRCH120J50
C 602	(A,62,38)	CCSRCH120J50
C 603	(A,93,56)	CKSRYB104K25
C 604	(A,71,36)	CEVW100M16
C 605	(A,53,41)	CKSRYB104K25
C 607	(A,69,40)	CKSRYB104K25
C 608	(A,99,57)	CCSRCH100D50
C 609	(A,101,57)	CCSRCH100D50
C 610	(A,91,60)	CEVW100M16

Circuit Symbol and No.		Part No.
C 611	(A,53,50)	CKSRYB104K25
C 612	(A,49,41)	CKSRYB104K25
C 613	(A,67,64)	CKSRYB104K25
C 615	(A,114,36)	CKSSYB104K10
C 616	(A,110,46)	CKSRYB104K25
C 617	(A,105,55)	CKSRYB102K50
C 618	(A,98,32)	CKSRYB104K25
C 619	(A,90,56)	CKSRYB102K50
C 620	(A,49,55)	CCSRCH100D50
C 621	(A,49,50)	CCSRCH100D50
C 622	(A,66,66)	CKSSYB104K10
C 623	(A,68,66)	CKSSYB104K10
C 624	(A,106,65)	CKSSYB103K16
C 801	(A,155,64)	CEAT102M16(P35)
C 802	(A,150,56)	CKSRYB103K50
C 803	(A,136,59)	CEAT471M16(P35)
C 804	(A,140,64)	CKSRYB103K50
C 805	(A,144,67)	CKSRYB104K25
C 807	(A,138,67)	CKSQYB475K6R3
C 808	(A,136,66)	CKSRYB103K50
C 811	(A,149,48)	CEVW100M16
C 812	(A,152,47)	CKSRYB104K25
C 813	(A,149,41)	CEVW220M16
C 814	(A,153,43)	CKSRYB104K25
C 815	(A,144,46)	CKSRYB104K25
C 816	(A,141,50)	CEVW100M16
C 817	(A,141,46)	CKSRYB473K50
C 832	(A,109,110)	CKSRYB103K50
C 833	(A,110,118)	CEVW101M6R3
C 836	(A,115,114) 1µF	CCG1207
C 841	(A,9,59)	CKSQYB475K6R3
C 842	(A,133,117)	CEVW100M16
C 843	(A,141,112)	CKSRYB104K25
C 844	(A,155,128)	CKSRYB103K50
C 845	(A,161,124)	CEVW101M16
C 846	(A,152,114)	CKSYB475K10
C 847	(A,145,115)	CKSRYB104K25
C 848	(A,152,112)	CKSRYB104K25
C 849	(A,142,117)	CEVW100M16
C 850	(A,133,112)	CKSRYB103K50
C 851	(A,139,76) 470µF/25V	CCH1337(P35)
C 852	(A,166,76) 470µF/25V	CCH1337(P35)
C 853	(A,143,93)	CKSRYB104K25
C 854	(A,142,91)	CKSYB475K16
C 855	(A,142,88)	CKSYB475K16
C 857	(A,149,98)	CKSRYB104K25
C 858	(A,133,103)	CKSRYB473K50
C 859	(A,135,100)	CKSRYB104K25
C 860	(A,139,107)	CCSSCH101J50
C 861	(A,151,103)	CKSRYB103K50
C 862	(A,149,100)	CKSRYB223K50
C 863	(A,144,107)	CKSQYB475K6R3
C 864	(A,118,87)	CKSYB225K16
C 865	(A,124,116) 470µF/25V	CCH1337(P35)
C 866	(A,152,87)	CKSYB225K16
C 867	(A,161,113) 470µF/25V	CCH1337(P35)
C 870	(A,9,53)	CKSSYB104K10
C 871	(A,137,118)	CKSYB475K10
C 872	(A,138,44)	CKSYB475K10
C 901	(A,163,57)	CEAT471M16(P35)

Circuit Symbol and No.		Part No.
C 902	(A,153,37)	CKSRYB104K25

B

Unit Number:CWE1933
Unit Name:Tuner Unit

MISCELLANEOUS

IC 501	(A,30,22)	IC	MAX2140ETH
IC 502	(A,45,21)	IC	MAX999EUK
D 501	(A,16,28)	Diode	HZU5R6(B3)
D 502	(A,18,30)	Diode	HZU5R6(B3)
D 503	(A,16,19)	Diode	HZU5R6(B3)
L 501	(A,16,25)	Inductor	LCMA27NJ1608
L 502	(A,19,19)	Inductor	CTF1657
L 504	(A,19,22)	Inductor	LCYBR22J1608
L 505	(A,23,22)	Inductor	LCYB56NJ1005
L 506	(A,23,21)	Inductor	LCYB56NJ1005
L 507	(A,19,7)	Inductor	CTF1657
L 508	(A,35,12)	Inductor	LCYB27NJ1005
L 509	(A,35,11)	Inductor	LCYB27NJ1005
L 510	(A,33,15)	Inductor	LCYBR22J1608
L 511	(A,35,31)	Inductor	LCYB27NJ1005
L 512	(A,35,30)	Inductor	LCYB27NJ1005
L 513	(A,36,20)	Inductor	LCYBR22J1608
L 516	(A,30,12)	Inductor	LCYB27NJ1608
L 517	(A,29,12)	Inductor	LCMA27NJ1608
L 518	(A,46,24)	Chip Bead	VTL1128
L 519	(A,44,16)	Ferrite Bead	CTF1528
L 520	(A,30,15)	Inductor	LCMA47NJ1608
X 501	(A,35,7)	Resonator 23.92Hz	CSS1676
F 502	(A,19,13)	Filter	CTF1649
F 501	(A,20,26)	Filter	CTF1648

RESISTORS

R 502	(A,27,30)	RS1/16SS103J
R 503	(A,28,30)	RS1/16SS103J
R 509	(A,37,21)	RS1/16SS201J
R 511	(A,44,18)	RS1/16SS0R0J
R 512	(A,43,20)	RS1/16SS2701F
R 513	(A,43,23)	RS1/16SS2701F
R 514	(A,42,23)	RS1/16SS2002F
R 515	(A,42,21)	RS1/16SS2002F
R 517	(A,45,8)	RS1/16SS0R0J
R 518	(A,44,26)	RS1/16SS470J

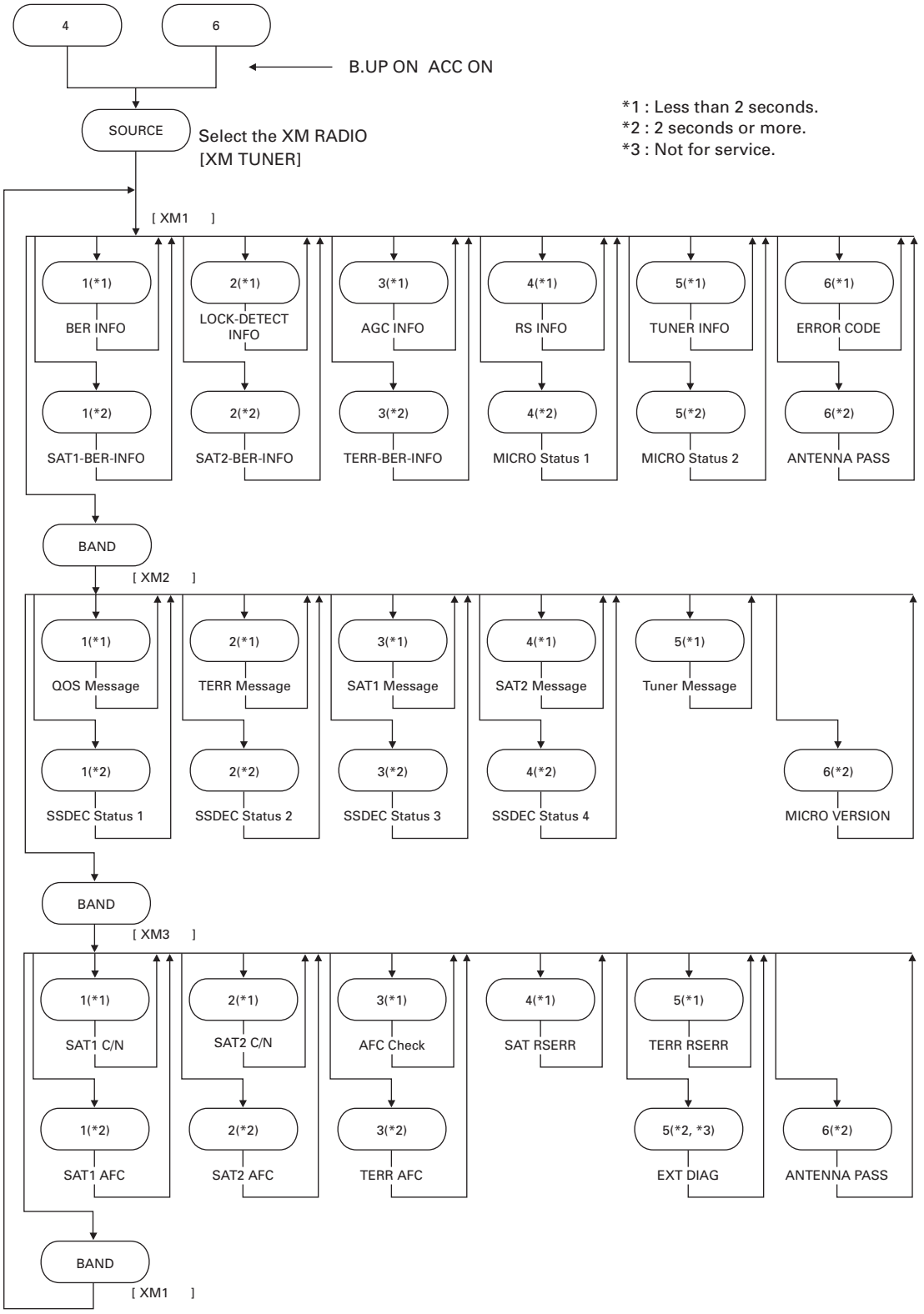
CAPACITORS

C 501	(A,16,23)		CCSSCH180J50
C 503	(A,17,18)		CCSSCH121J50
C 505	(A,20,18)		CCSSCH121J50
C 506	(A,21,23)	3.9pF	CCG1128
C 509	(A,21,20)	3.9pF	CCG1128
C 510	(A,17,23)		CCSSCH221J50
C 511	(A,24,24)		CCSSCH101J50
C 513	(A,20,8)		CCSSCH101J50
C 514	(A,17,8)		CCSSCH101J50
C 515	(A,23,19)		CKSRYB224K10
C 516	(A,24,17)		CCSSCH180J50
C 517	(A,26,27)		CCSSCH101J50
C 518	(A,24,20)		CCSSCH101J50

Circuit Symbol and No.			Part No.
C 521	(A,27,16)		CKSSYB103K16
C 522	(A,26,16)		CKSSYB103K16
C 523	(A,28,16)		CKSSYB103K16
C 524	(A,30,16)		CKSSYB103K16
C 525	(A,29,29)		CKSSYB103K16
C 526	(A,29,27)		CKSSYB103K16
C 527	(A,31,16)		CKSSYB103K16
C 528	(A,31,27)		CKSSYB103K16
C 529	(A,33,17)		CCSSCH221J50
C 530	(A,33,18)		CKSSYB103K16
C 531	(A,35,24)		CCSSCH180J50
C 532	(A,37,13)		CCSSCH180J50
C 533	(A,37,11)		CCSSCH180J50
C 534	(A,35,27)		CCSSCH180J50
C 535	(A,36,24)		CKSSYB103K16
C 536	(A,35,28)	2.2µF	CCG1179
C 537	(A,37,9)		CCSSCH220J50
C 538	(A,35,23)		CCSSCH101J50
C 539	(A,33,12)		CKSSYB103K16
C 540	(A,33,11)		CKSSYB103K16
C 541	(A,37,31)		CCSSCH180J50
C 542	(A,37,29)		CCSSCH180J50
C 543	(A,37,19)		CKSSYB103K16
C 544	(A,37,20)		CKSSYB103K16
C 545	(A,33,31)		CKSSYB103K16
C 546	(A,33,30)		CKSSYB103K16
C 547	(A,37,26)		CKSSYB103K16
C 548	(A,35,18)		CCSSCH180J50
C 550	(A,36,22)	2.2µF	CCG1179
C 553	(A,37,23)		CCSSCH180J50
C 554	(A,36,18)		CKSSYB103K16
C 560	(A,44,24)		CKSSYB103K16
C 561	(A,45,17)		CKSSYB104K10
C 562	(A,45,18)		CCSSCH180J50
C 563	(A,42,20)		CKSSYB103K16
C 564	(A,31,12)		CCSSCH180J50
C 565	(A,28,14)		CCSSCH180J50
C 566	(A,30,10)		CCSSCH180J50
C 567	(A,28,10)		CCSSCH180J50
C 568	(A,46,25)		CCSSCH100D50
C 569	(A,46,26)		CCSSCH100D50
C 573	(A,43,15)		CKSSYB104K10
C 574	(A,16,22)		CCSSCH101J50

6. ADJUSTMENT
6.1 TEST MODE

● **Flow Chart**



The following head units are exceptional so that their entering ways to the test mode are different from others.
Test mode starting procedure reset while pressing the 3 and 5 keys together.

KEH-P4010/X1M/UC

● Diagnostic mode

1. To Enter the Diagnostic mode
   Reset while pressing the 4 and 6 keys together.

2. To Exit from the Diagnostic mode
   Reset the system.

3. Contents of the Diagnostic mode

Mode number	Mode name	General description
1	BER INFO	Displays error rate of Viterbi decoding in ground wave, satellite wave 1, and satellite wave 2, respectively. (1 significant digit)
2	LOCK-DETECT INFO	Displays decoding LOCK in ground wave, satellite wave 1, and satellite wave 2, respectively. (MCM + TDM for ground wave, QPSK + TDM for satellite waves)
3	AGC INFO	AGC value of ground/satellite waves (3 decimal digits x 2)
4	RS INFO	The number of error correction bytes of Read-Solomon decoding (4 hexadecimal digits) and the number of error frames (4 hexadecimal digits)
5	TUNER INFO	Lock/Unlock information and synchronous ensemble (A/B) of PLL
6	ERROR CODE	Error code for identifying error part
7	SAT1-BER-INFO	Error rate of Viterbi decoding in satellite wave 1 (3 significant digits)
8	SAT2-BER-INFO	Error rate of Viterbi decoding in satellite wave 2 (3 significant digits)
9	TERR-BER-INFO	Error rate of Viterbi decoding in ground wave (3 significant digits)
10	MICRO Status 1	System Operation Mode (2 hexadecimal digits) and XM Operation Mode 1 (2 hexadecimal digits)
11	MICRO Status 2	XM Operation Mode 2 (2 hexadecimal digits) and XM Operation Mode 3 (2 hexadecimal digits)
12	ANTENNA PASS	Skips antenna unconnection check (Cancellable only by reset)
13	QOS Message	Displays Quality of Service value (2 decimal digits)
14	TERR Message	Lock/Unlock of decoding in ground wave and Viterbi decoding rate (2 significant decimal digits), RS error correction rate (2 significant decimal digits), and RS error rate (2 significant decimal digits)
15	SAT1 Message	Lock/Unlock of decoding in satellite wave 1 and Viterbi decoding rate (2 significant decimal digits), RS error correction rate (2 significant decimal digits), and RS error rate (2 significant decimal digits)
16	SAT2 Message	Lock/Unlock of decoding in satellite wave 2 and Viterbi decoding rate (2 significant decimal digits), RS error correction rate (2 significant decimal digits), and RS error rate (2 significant decimal digits)
17	Tuner Message	Information of LOCK/UNLOCK of PLL and information of ground/satellite antenna connection
18	Blank	
19	SSDEC Status 1	Synchronization/Asynchronization of PC receive, the number of overflow at the time of voice service data input, and the number of underflow at the time PCM output
20	SSDEC Status 2	SSDEC general error code (6 significant hexadecimal digits)
21	SSDEC Status 3	SSDEC service extract error code 1 (4 significant hexadecimal digits)
22	SSDEC Status 4	SSDEC service extract error code 2 (4 significant hexadecimal digits)
23	Blank	
24	MICRO VERSION	Microcomputer version
25	SAT1 C/N	C/N ratio in satellite wave 1 (dB)
26	SAT2 C/N	C/N ratio in satellite wave 2 (dB)
29	AFC Check	AFC identification in ZIF tuner
27	SAT RS ERR	RS BLOCK #1/2 Error of satellite waves (2 decimal digits)
28	TERR RS ERR	RS BLOCK #1/2 Error of ground waves (2 decimal digits)
30	Blank	
31	SAT1 AFC	AFC of satellite wave 1 in ZIF tuner
32	SAT2 AFC	AFC of satellite wave 2 in ZIF tuner
33	TERR AFC	AFC of ground wave in ZIF tuner
34	Blank	
35	EXT DIAG	XM Extended Diagnostic mode (Not for service)
36	ANTENNA PASS	Skips antenna unconnection check (Cancellable only by reset)

4. Details of the Diagnostic mode

4.1 BER INFO

Display format : [X X _ X X _ X X]
①②③④⑤⑥⑦⑧

① : The Viterbi signal decryption error rate (effective value) for satellite wave 1. (*)
② : The Viterbi signal decryption error rate (truncated binary exponential, with negative sign abbreviated) for satellite wave 1. (*)
③ : Spacing character.
④ : The Viterbi signal decryption error rate (effective value) for satellite wave 2. (*)
⑤ : The Viterbi signal decryption error rate (truncated binary exponential, with negative sign abbreviated) for satellite wave 2. (*)
⑥ : Spacing character.
⑦ : The Viterbi signal decryption error rate (effective value) for ground waves. (*)
⑧ : The Viterbi signal decryption error rate (truncated binary exponential, with negative sign abbreviated) for ground waves. (*)

* : Each piece of information is effective following the initialization of CDEC. The updating interval is 432 ms. If not any of the modulated wave signals can be received (that is, the signal cannot be LOCKed), then a hyphen ("-") will be displayed.
"If notany of the modulated wave signals can be received" it represents a condition that the modulated signals could not receive the signals described in section 4.2.

Display example : If the satellite wave 1 = 10%, satellite wave 2 = 3.4% and ground wave = 0.23%, the display will show [1 1 _ 3 2 _ 2 3].

4.2 LOCK-DETECT INFO

Display format : [X X _ X X _ X X]
①②③④⑤⑥⑦⑧

① : The modulated QPSK signal of satellite wave 1 can be received (L) / cannot be received (-).
② : The modulated TDM signal of satellite wave 1 can be received (L) / cannot be received (-).
③ : Spacing character.
④ : The modulated QPSK signal of satellite wave 2 can be received (L) / cannot be received (-).
⑤ : The modulated TDM signal of satellite wave 2 can be received (L) / cannot be received (-).
⑥ : Spacing character.
⑦ : The modulated MCM signal of ground wave can be received (L) / cannot be received (-).
⑧ : The modulated TDM signal of ground wave can be received (L) / cannot be received (-).

Each piece of information is effective following the initialization of CDEC. The updating interval is 432 ms.

Display example : If the QPSK signal of satellite wave, TDM signal of the satellite wave 2, and MCM signal of the ground wave are not locked, the display will show [- L _ L - _ - L].

4.3 AGC INFO

Display format : [X X X _ Y Y Y _]

X : The AGC signal count value of the satellite wave (three digits of a decimal value).
Y : The AGC signal count value of the ground wave (three digits of a decimal value).

Each piece of information becomes effective following the initialization of CDEC. The updating interval is 432 ms.

Display example : If the satellite wave's AGC = 123, while the ground wave's AGC = 32, the display will show [1 2 3 _ 0 3 2 _].

4.4 RS INFO
Display format : [X X X X Y Y Y Y]

X : Number of error correction bytes from Read-Solomon decryption (four digits of hexadecimal value).
Y : Number of error frames from Read-Solomon decryption (four digits of hexadecimal value).

Each piece of information becomes effective following the initialization of CDEC. The updating interval is 432 ms.

Turn Integrating Mode ON/OFF by holding down "4" key while RS INFO is displayed.
Reset integrating value by holding down "4" key while RS Integrating Mode is ON.

Display example : If the error correction bytes = 0 x 0040, while the error frames = 0 x 0010, the display will show [0 0 4 0 0 0 1 0].

4.5 TUNER INFO
Display format : [X _ Y Y Y Y _ Z]

X : Synchronous ensemble (A / B).
_ : Spacing character.
Y : LOCK/UNLOCK status of PLL (L K _ _ / U N L K).
Z : RF AGC status of ZIF (Engaged = 1 / Not Engaged = 0).

The information becomes effective following the synchronization process during the system start up.
The updating interval is 16 ms.

Display example : If the PLL is locked with ensemble A, the display will show [A _ L K _ _ _ 1].

4.6 ERROR CODE
Display format : [E R R O R _ X X]

_ : Spacing character.
X : Error occurring (two digits of hexadecimal value). The upper digit is for the major (physical) error, while the lower digit is for the minor error (temporary or partial errors). Refer to the following table for details:

Code value		Description	Error location
Major	Minor		
	0	No Error	No minor error.
	1	CDEC Communication Error	The line for communicating with CDEC.
	2	SSDEC Communication Error	The line for communicating with SSDEC.
	3	SSDEC No Response	No SSDEC response (DSP core freeze).
	4	No Signal	100% error of Vitarbi signal decryption.
	5	Activation Required	Not activated.
	6	Authorization Required	Not authorized.
0		No Error	No major error.
1		ANTENNA No Connect	Antenna not connected.
2		ANTENNA Short	Short circuited antenna cable.
3		PLL UNLOCK	PLL cannot be synchronized (RF circuit failure).
4		Reserved	Undefined.
5		NVM Error	Defective NVM inside CAP.
6		CAP Error	Defective CAP (including situations where CAP is not connected).
7		Version Unknown	Unknown DSP core software version.
8		DDC Fail	Defective DDC
9		Unbound	CAP not bound

Display example : If the antenna is not connected, the display will show [E R R O R _ 1 4]
(no signal due to unconnected antenna).

4.7 SAT1-BER-INFO
Display format : [1 _ X . X X E Y]

X : Viterbi signal decryption error rate (effective three digits).
Y : Truncated binary exponential (with negative sign abbreviated) of the error rate.
_ : Spacing character.

The information becomes effective following the initialization of CDEC. The updating interval is 432 ms. If the wave's modulated signal cannot be received (meaning such a signal cannot be locked on), a hyphen ("-") will be displayed.

Display example : If the error rate is 0.560%, the display will show [1 _ 5 . 6 0 E 3].

4.8 SAT2-BER-INFO
Display format : [2 _ X . X X E Y]

X : Viterbi signal decryption error rate (effective three digits).
Y : Truncated binary exponential (with negative sign abbreviated) of the error rate.
_ : Spacing character.

The information becomes effective following the initialization of CDEC. The updating interval is 432 ms. If none of wave's modulated signal can be received (meaning such a signal cannot be locked on), a hyphen ("-") is displayed.

Display example : If a signal cannot be locked on, the display will show [2 _ - - - - - -].

4.9 TERR-BER-INFO
Display format : [T _ X . X X E Y]

X : Viterbi signal decryption error rate (effective three digits).
Y : Truncated binary exponential (with negative sign abbreviated) of the error rate.
_ : Spacing character.

The information will become effective following the initialization of CDEC. The updating interval is 432 ms. If the wave's modulated signal cannot be received (meaning such a signal cannot be locked on), a hyphen ("-") will be displayed.

Display example : If the error rate is 0%, the display will show [T _ 0 . 0 0 E 0].

4.10 MICRO Status 1
Display format : [M 1 _ X X _ Y Y]

X : System operation mode (two effective digits of hexadecimal value).
Y : XM operation mode 1 (two effective digits of hexadecimal value).
_ : Spacing character.

System operation mode table

Mode number	Mode name	Meaning
00	STANDBY	Under standby
05	ENABLECHK	Checking GaNET connection
10	OFF	ACC being ON and XM being OFF
11	ANT_OFF	Forcibly terminating because of antenna short-circuit
12	ON_STANDBY	Under Hot Standby
21	ANT_ON	Being ON at the time of antenna short-circuit
2F	ON	XM being ON

XM operation mode 1 table

Mode number	Mode name	Meaning
00	HALT	XM OFF completed
01	ON	XM being ON
02	CHRD	Recalling preset channel
03	CHWD	Stores to preset channel
04	CHUP	Preset channel being UP
05	CHDN	Preset channel being DOWN
06	PROGUP	Channel being UP
07	PROGDN	Channel being DOWN
08	PROG10UP	Channel rough being UP
09	PROG10DN	Channel rough being DOWN
0E	TRIGON	Receive SID extinguished
10	RX	Receiving
12	CHUP_WAIT	Waiting for key release during preset channel being UP
13	CHDN_WAIT	Waiting for key release during preset channel being DOWN
14	CHUP_REL	Key release during preset channel being UP
15	CHDN_REL	Key release during preset channel being DOWN
16	PROG10UP_WAIT	Waiting for key release during channel rough being UP
17	PROG10DN_WAIT	Waiting for key release during channel rough being DOWN
18	PROG10UP_REL	Key release during channel rough being UP
19	PROG10DN_REL	Key release during channel rough being DOWN
1A	CATUP_WAIT	Waiting for key release during category being UP
1B	CATDN_WAIT	Waiting for key release during category being DOWN
1C	CATUP_REL	Key release during category being UP
1D	CATDN_REL	Key release during category being DOWN
1E	CATUP_LAST	Searching last category being UP
1F	CATDN_LAST	Searching last category being DOWN
40	SCANUP	Scanning channel
42	SCANUPHLD	Holding channel scan
44	CATSCANUP	Scanning category
46	CATSCANUPHLD	Holding category scan
4C	SCANSTOP	Scan under suspension
4D	IDCODE	RADIO ID being displayed
4E	PROGDIRECT	Searching channel by dial operation
50	CATSSTEPUP	Search UP in the category by dial operation
52	CATSSTEP_DN	Search DOWN in the category by dial operation
53	CATUP_CRNT	Searching receiving category being UP
54	CATDN_CRNT	Searching receiving category being DOWN
55	REQCATS_UP	Getting the name of channel in the category searched UP
56	REQCATS_DN	Getting the name of channel in the category searched DOWN
60	STANDBY	Starting Hot Standby
61	STBYSTAY	Under Hot Standby
80	OFF	XM being OFF

Display example: If the system is receiving signals, the display will show [M1_2F_10].

4.11 MICRO Status2

Display format : [M 2 _ X X _ Y Y]

X : XM operation mode 2 (two effective digits of hexadecimal value).
Y : XM operation mode 3 (two effective digits of hexadecimal value).
_ : Spacing character.

XM operation mode 2 table

Mode number	Mode name	Meaning
00	STOP	API control finished
01	START	API control started
02	GETSID	Getting SID
04	GETPROGNAME	Switching program

05	OFF	Processing OFF
06	SETUP	Application operation started
07	NEXTPROG	Moves to the next program
08	SELPROG	Selecting program
0A	NEXTCAT	Getting next category
0C	GETCATNAME	Getting next category name
0D	NOSID	No SID
0E	GETID	Getting HWID code
30	NEXTPROG1	Being in the first half of shift processing to the next channel
31	NEXTPROG2	Being in the latter half of shift processing to the next channel
32	SELPROG1	Selecting the program from NEXTPROG1
33	SELPROG2	Selecting the program from NEXTPROG2
34	RFCHK1	Waiting for restore from NOSIGNAL
35	RFCHK2	Waiting for restore from NOSIGNAL
36	SELPROGERR	Processing select error during direct selection
37	NOWPROG	Getting the current channel name

XM operation mode 2 table

Mode number	Mode name	Meaning
00	STOP	XM circuit OFF completed
01	PWROFFW	XM circuit power being OFF
02	STBYWT	Resetting SSDEC
03	PWRON	XM circuit initialization started
04	PWRONWT	Waiting for XM circuit power ON being stabilized
05	STBY	SSDEC reset started
06	PREMUTE	Pre-DAC mute started
07	PREMUTEWT	Waiting for pre-DAC mute
08	RF_INIT	Downloading DSP patch code
09	DWLD	Starts downloading DSP patch code
0A	INIT	SSDEC initialization started
0B	INIT2	Initializing SSDEC (step 2)
0C	INIT3	Initializing SSDEC (step 3)
0D	INIT4	Initializing SSDEC (step 4)
0E	INIT5	Initializing SSDEC (step 5)
0F	INIT6	Initializing SSDEC (step 6)
10	INIT7	Initializing SSDEC (step 7)
11	INIT8	Initializing SSDEC (step 8)
12	INIT9	Initializing SSDEC (step 9)
13	INIT10	Initializing SSDEC (step 10: Issuing Power Up command)
14	SLEEPWT	Waiting for reply from Power Off command
15	SLEEP	Issues Power Off command
16	INIT10WT	Initializing SSDEC (waiting for replay from Power Up command)
18	INIT11	Initializing SSDEC (step 11: Issuing Force Update command)
19	INIT11WT	Waiting for reply from Force Update command
1A	INIT12	Initializing SSDEC (step 12)
1F	HOLD	Waiting for other control being completed
20	IDLE	Control completed
21	READY1	Preparation 1 before starting control
22	READY2	Preparation 2 before starting control
25	PURGECOM	Preparation 3 before starting control (waiting for unnecessary command processing being completed)
26	PURGECOM1	Waiting for unnecessary OFF command processing being completed
27	RX_PREMUTE	Starts pre-DAC mute in other than activation
28	RX_PREMUTE_WT	Waiting for pre-DAC mute in other than activation
29	RX_AFTMUTE	Starts post-DAC mute in other than activation
2A	RX_AFTMUTE_WT	Waiting for post-DAC mute in other than activation
2B	SRVCANCEL	Cancels selected service
2C	SRVCANCEL_WT	Waiting for completion of canceling selected service
2D	SETENS	Switches PLL ensemble
2E	SETENSWT	Waiting for switching of PLL ensemble
2F	SETPCID	Switching PCID of CDEC
30	SETENSWT2	Checking LDET after switching PLL ensemble

31	CHECK_RQ	Outputs Service/Channel Check command. Or outputs Channel UpDown/ Program UpDown command.
32	CHECK_RQ1	Issues Channel Check command in the channel searched by Channel UpDown or Program UpDown command
33	CHECK_WT	Waiting for a reply from the command output by CHECK_RQ
34	CHECK_WT1	Waiting for a reply from the command output by CHECK_RQ1
35	SERVICE_EXT_RQ	Issues Service Extract command
36	SYNC_SQST1	Waiting for synchronization before issuing Service Extract command (1)
37	SYNC_SQST2	Waiting for synchronization before issuing Service Extract command (2)
38	SYNC_SQST3	Waiting for synchronization before issuing Service Extract command (3)
39	SERVICE_EXT_WT	Waiting for completion of Service Extract
3A	SERVICE_EXT_RQ1	Issues Service Extract command at the time of retry
3B	SERVICE_EXT_WT1	Waiting for completion of Service Extract at the time of retry
3D	NXTCATNO	Getting the next category number
3E	GETBIC	Getting labels
3F	GETBICWT	Waiting for acquisition of labels
40	EXT_CHK	Starts Extract state check
41	EXTERR_WT	Checking Extract state
42	BICADF_CHG_CHK	Checks program information changes
43	ANT_CHK	Checking antenna connection state
44	ACTIVATE_CHK	Checking Activation state
45	UPDATE_CATLIST	Starts updating category list
46	UPDATE_CATLISTWT	Updating category list
47	SSDEC_CHK_BITRATE	Checking bit rate
48	SSDEC_CHK_BITRATE _WT	Waiting for completion of bit rate check
49	SSDEC_CHK_DECDER	Checking decoding state
4A	SSDEC_FLAME _COUNT	Counting the number of errors
4B	SSDEC_RECOVER _DECODER_WT	Completing recovery processing
4C	SSDEC_RECOVER _DECODER1	Processing Recovery 1
4D	SSDEC_RECOVER _DECODER1_WT	Waiting for completion of processing Recovery 1
4E	SSDEC_RECOVER _DECODER2	Processing Recovery 2
4F	SSDEC_RECOVER _DECODER2_WT	Waiting for completion of processing Recovery 2
50	SSDEC_RECOVER _DECODER3	Processing Recovery 3
51	SSDEC_RECOVER _DECODER3_WT	Waiting for completion of processing Recovery 3
52	SSDEC_RECOVER _DECODER4	Processing Recovery 4
53	SSDEC_RECOVER _DECODER4_WT	Waiting for completion of processing Recovery 4
54	SSDEC_RECOVER _DECODER5	Processing Recovery 5
55	SSDEC_RECOVER _DECODER5_WT	Waiting for completion of processing Recovery 5
56	SSDEC_RECOVER _DECODER6_WT	Waiting for completion of processing Recovery 6
59	ACTIVATE_CHK1	Starts Activation Check
5A	ACTIVATE_CHK1_WT	Waiting for completion of Activation Check
5D	API_SERVICE_EXT _WT3	Waiting for completion of high-speed Service Extract
E0	HWERROR	Activation stop due to CAP error
E1	VERERROR	Activation stop due to unknown version of DSP core software
E2	ANTSHORT	Antenna short-circuited
E3	ANTOPEN	Antenna not connected
E4	NOSIGNAL	All error rates of Viterbi decoding are 100%.
E5	RF_UNLOCK	PLL cannot be locked

E6	ERV_UNAVAIL	Designated program is not found.
E7	TYPE_UNAVAIL	Program with designated service type is not found.
E8	PROG_UNAVAIL	Program with designated category is not found.
E9	UNKNOWN_PC	PC format is not standard.
EA	ACT_REQ	Activation required
EB	AUTH_REQ	Authorization required
EC	OFFAIR	Service being off-air
ED	DIFF_ENS	Designated Primary and Secondary PCID are not found on the same ensemble.
EE	PC_UNDETECT	Unable to receive PC of selected program
EF	SID_UNDETECT	Unable to identify SID of selected program
F0	SCT_UNDETECT	Unable to identify the service component type of selected program
F1	AUTH_MISS	Updating encryption key
F3	RAT_BLOCK	Being out of contract
F4	RAT_LOW	A program out of the contract was selected.
F5	TOD_ROLLBACK	The time information controlled in DSP core does not match the time information during on-air.
F6	IDLE_WT	Preparing for control completion
F7	DIFF_PCID	PCID discrepancy
FF	REQ_RETRY	SSDEC error occurred (restart required)

Display example: If the system is receiving, the display will momentarily show [M2_00_20].

4.12 ANTENNA PASS

No display.

If an antenna is not connected, and if this setting is made while the system is displaying the "ANTENNA" message, connection checks will not be conducted until the system has been reset (the system will assume normal operation without an antenna check).

4.13 QOS Message

Display format : [1 A A B B C C D]

A : The Viterbi error rate (two effective digits of decimal value) of ground wave. (*1)
B : The Viterbi error rate (two effective digits of decimal value) of satellite wave 1. (*1)
C : The Viterbi error rate (two effective digits of decimal value) of satellite wave 2. (*1)
D : The quality of service (QOS) value (a single effective digit decimal value). (*2)

*1 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If a signal is not received, the display will show "NS."
*2 : The single digit display may show from 0 to 9. If the display information is being acquired, the display will show "-". For 10 and over, the display will show "X".

4.14 TERR Message

Display format : [2 A B B C C D D]

A : The locking status of the ground wave. (*1)
B : The ground wave Viterbi signal error rate (two effective digits of decimal value). (*2)
C : The ground wave Read-Solomon symbol error rate (two-effective digits of decimal value). (*3)
D : The ground wave Read-Solomon non-correction code word (two effective digits of decimal value). (*4)

*1 : The "-" will be displayed while the system is acquiring the information, "N" if the signal is not locked on, "D" if only the demodulator is locked, and "T" if both the TDM and demodulator are locked on.
*2 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If a signal is not received, the display will show "NS."
*3 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".
*4 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".

4.15 STA1 Message
Display format : [3 A B B C C D D]

A : The locking status of the satellite wave 1. (*1)
B : The satellite wave 1 Bitabi signal error rate (two effective digits of decimal value). (*2)
C : The satellite wave 1 Read-Solomon symbol error rate (two-effective digits of decimal value). (*3)
D : The satellite wave 1 Read-Solomon non-correction code word (two effective digits of decimal value). (*4)

*1 : The "-" will be displayed while the system is acquiring the information, "N" if the signal is not locked on, "D" if only the demodulator is locked, and "T" if both the TDM and demodulator are locked on.
*2 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If no signal is received, the display will show "NS."
*3 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".
*4 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".

4.16 SAT2 Message
Display format : [4 A B B C C D D]

A : The locking status of the satellite wave 2. (*1)
B : The satellite wave 2 Bitabi signal error rate (two effective digits of decimal value). (*2)
C : The satellite wave 2 Read-Solomon symbol error rate (two-effective digits of decimal value). (*3)
D : The satellite wave 2 Read-Solomon non-correction code word (two effective digits of decimal value). (*4)

*1 : The "-" will be displayed while the system is acquiring the information, "N" if the signal is not locked on, "D" if only the demodulator is locked, and "T" if both the TDM and demodulator are locked on.
*2 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX". If no signal is received, the display will show "NS."
*3 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".
*4 : The two-digit display may show from 0 to 99. If the display information is being acquired, the display will show "-". For 100, the display will show "XX".

4.17 Tuner Message
Display format : [5 A B _ _ _ _ _]

A : The locking status of the PLL signal (L= locked, U = unlocked).
B : Antenna connection status (D= normal, U = connection failure).

4.18 Blank

4.19 SSDEC Status1
Display format : [6 A A A B B C C]

A : The synchronization status of the PC signal (S10 = synchronized, U01 = asynchornous).
B : Overflow count during voice service data input (two effective digits of hexadecimal value).
C : Underflow count during the PCM output (two effective digits of hexadecimal value).

4.20 SSDEC Status2
Display format : [7 _ A A A A A A]

A : General error information of SSDEC (six effective digits of hexadecimal value).

4.21 SSDEC Status3
Display format : [8 _ _ _ A A A A]

A : The Extract error information 1 of the SSDEC (four effective digits of hexadecimal value).

4.22 SSDEC Status4
Display format : [9 _ _ _ A A A A]

A : The Extract error information 2 of the SSDEC (four effective digits of hexadecimal value).

4.23 Blank

4.24 MICRO VERSION
Display format : [V E R A A A . B]

A : Main microcomputer major version (two effective digits of decimal value).
B : Main microcomputer minor version (a single effective digit of decimal value).
C : Sub microcomputer major version (two effective digits of decimal value).
D : Sub microcomputer minor version (a single effective digit of decimal value).

Display example : If the Main version is 14.7 and Sub version is 2.0, the display will show [1 4 . 7 0 2 . 0].

4.25 SAT1 C/N
Display format : [1 _ X X X . Y Y]

X : Integer part of C/N ratio (three effective digits of decimal value).
Y : Fractional part of C/N ratio (00/25/50/75).

Displays C/N ratio of satellite wave 1. The unit is dB.

Display example : If the C/N ratio is 6.75 dB, the display will show [1 _ _ _ 6 . 7 5].

4.26 SAT2 C/N
Display format : [2 _ X X X . Y Y]

X : Integer part of C/N ratio (three effective digits of decimal value).
Y : Fractional part of C/N ratio (00/25/50/75).

Displays C/N ratio of satellite wave 2. The unit is dB.

Display example : If the C/N ratio is 6.75 dB, the display will show [2 _ _ _ 6 . 7 5].

4.27 ZIF AFC Check
Display format : [X X _ Y Y _ Z Z]

X : AFC identification of satellite wave 1 (OK/NG).
Y : AFC identification of satellite wave 2 (OK/NG).
Z : AFC identification of ground wave (OK/NG).

Identifies as valid (OK) if AFC offset of satellite wave 1, 2, and ground wave, respectively, is below 2 KHz. Identifies as invalid (NG) if it is above 2 KHz.

Display example : If the AFC offset of satellite wave 2 is invalid and that of others are valid, the display will show [O K _ N G _ O K].

4.28 SAT RSERR
Display format : [S _ X X _ _ Y Y]

X : RS Error Block 1 of satellite wave (two effective digits of decimal value).
Y : RS Error Block 2 of satellite wave (two effective digits of decimal value).

Displays RS Error Block 1 or 2 of satellite wave.

Display example : If the Sat Rs Err1 = 10 and Sat Rs Err2 = 8, the display will show [S _ 1 0 _ _ _ 8].

4.29 TERR RSERR
Display format : [T _ X X _ _ Y Y]

X : RS Error Block 1 of ground wave (two effective digits of decimal value).
Y : RS Error Block 2 of ground wave (two effective digits of decimal value).

Displays RS Error Block 1 or 2 of ground wave.

Display example : If the Terr Rs Err1 = 8 and Terr Rs Err2 = 10, the display will show [T _ _ 8 _ _ 1 0].

4.30 Blank

4.31 SAT1 AFC
Display format : [1 _ X . X X Y Z]

X : AFC offset frequency value of satellite wave 1 (1 integer digit and 2 fractional digits). The unit is Hz.
Y : Positive/Negative sign of index (+/-).
Z : Index (decimal).

Displays AFC offset frequency value of satellite wave 1. The index is displayed with 2 fractional digits.

Display example : If the AFC offset of satellite wave 1 is 12.3 Hz, the display will show [1 _ 1 . 2 3 + 1].

4.32 SAT2 AFC
Display format : [2 _ X . X X Y Z]

X : AFC offset frequency value of satellite wave 2 (1 integer digit and 2 fractional digits). The unit is Hz.
Y : Positive/Negative sign of index (+/-) .
Z : Index (decimal).

Displays AFC offset frequency value of satellite wave 2. The index is displayed with 2 fractional digits.

Display example : If the AFC offset of satellite wave 2 is 451Hz, the display will show [2 _ 4 . 5 1 + 2].

4.33 TERR AFC
Display format : [T _ X . X X Y Z]

X : AFC offset frequency value of ground wave (1 integer digit and 2 fractional digits). The unit is Hz.
Y : Positive/Negative sign of index (+/-).
Z : Index (decimal).

Displays AFC offset frequency value of ground wave. The index is displayed with 2 fractional digits.

Display example : If the AFC offset of ground wave is 1023Hz, the display will show [T _ 1 . 0 2 + 3].

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case (Fig.1)**

1 Remove the five screws and then remove the Case.

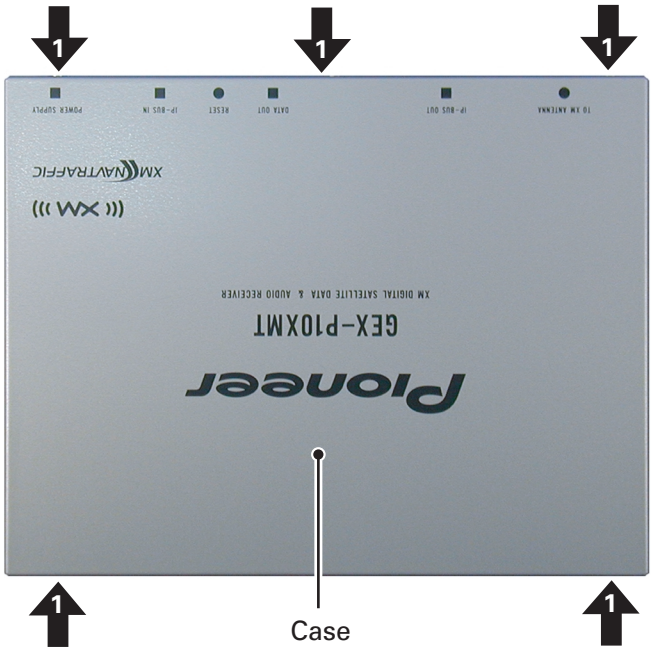


Fig.1

● **Removing the Main Unit (Fig.2)**

1 Remove the two screws.

2 Straighten the tabs at four locations indicated.

3 Remove the three screws and then remove the Main Unit.

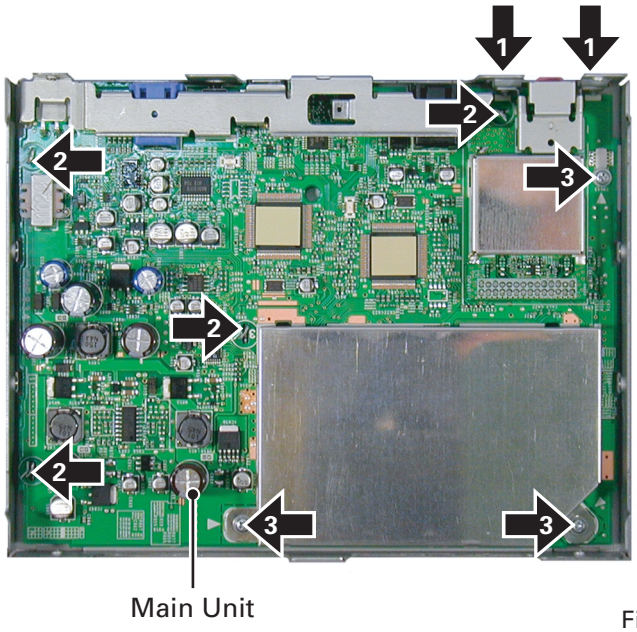
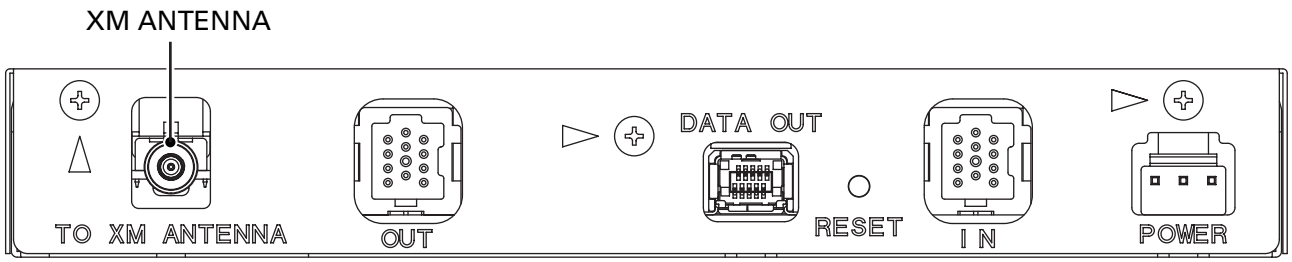
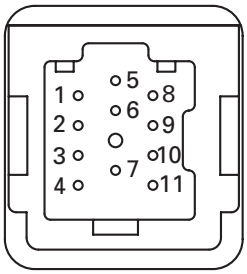


Fig.2

7.1.2 CONNECTOR FUNCTION DESCRIPTION

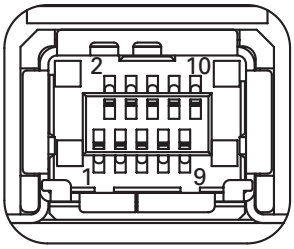


IP-BUS OUT



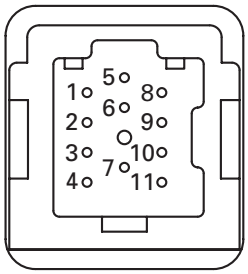
1.BUS+	7.BUSL3
2.BUSG5	8.ASENB
3.BUSG5	9.BUSR3
4.NC	10.BUSAG1
5.BUS-	11.BUSAG1
6.BUSG5	

DATA OUT



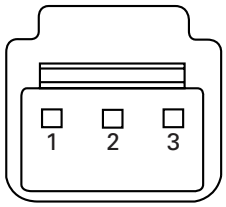
1.NC	6.NC
2.NC	7.CTOXM
3.GNDD	8.XMTOC
4.NC	9.NC
5.NC	10.CSENS

IP-BUS IN



1.BUS+	7.BUSL1
2.BUSG1	8.ASENB
3.BUSG1	9.BUSR1
4.NC	10.BUSR2
5.BUS-	11.BUSL2
6.BUSG1	

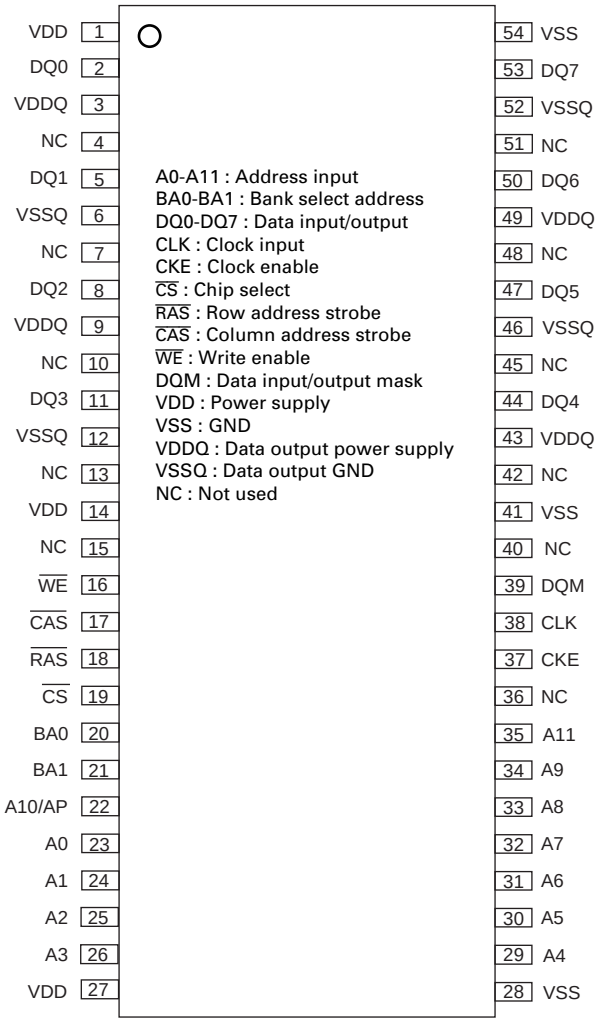
POWER SUPPLY



1.GND
2.ACC
3.BATT.

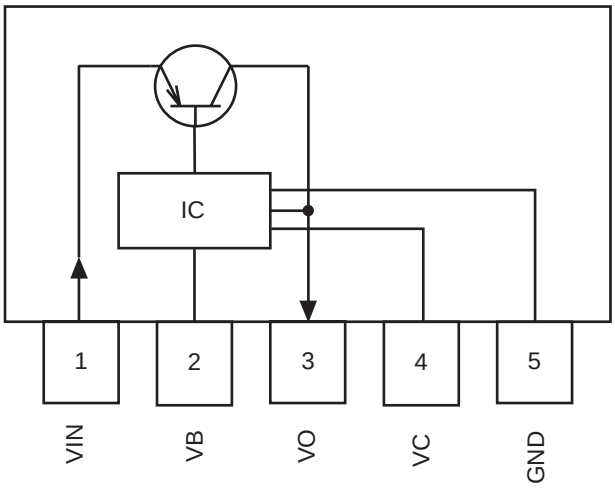
7.2 IC

* K4S280832F-TC75

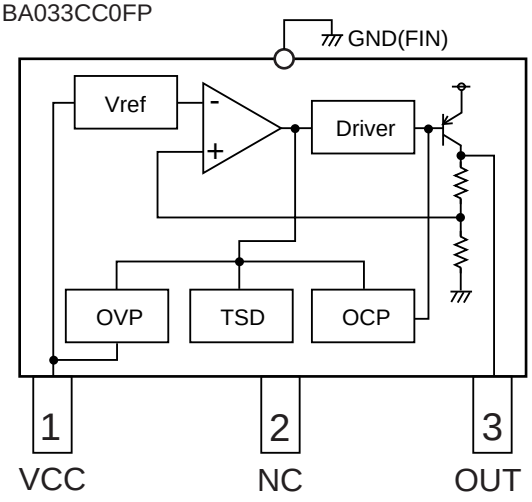


IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

PQ012FZ01ZP



BA033CC0FP



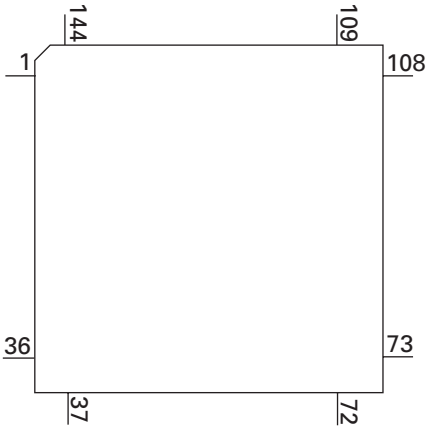
● Pin Functions(STA850P)

Pin No.	Pin Name	I/O	Function and Operation
1	CLKO	O	23.92MHz Clock output
2	I2C_ADDR	I	I2C device address select input
3	GND9		Digital GND
4	MCLK	I	Master clock input
5	TCS		Reserved for Test
6	GNDIO1		Pad ring GND
7	VDDIO1		3.3V Pad ring power supply
8	TEST_EN	I	Test enable input
9	FTESTEN	I	Functional test enable input
10	INCM1	I	ADC1 C. M. reference input
11	REFP1	I	ADC1 reference input (+)
12	REFM1	I	ADC1 reference input (-)
13	AD_GND_1		ADC GND
14	INM1	I	ADC1 differential input (-)
15	INP1	I	ADC1 differential input (+)
16	AD_GND_2		ADC GND
17	INP2	I	ADC2 differential input (+)
18	INM2	I	ADC2 differential input (-)
19	AD_GND_3		ADC GND
20	REFM2	I	ADC2 reference input (-)
21	REFP2	I	ADC2 reference input (+)
22	AD_VDD3_1		ADC 3.3V Analog power supply
23	INCM2	I	ADC2 C. M. reference input
24	AD_VDD3_2		ADC 3.3V Analog power supply
25	AD_GND_4		ADC Analog GND
26	AD_VDD3_3		ADC 3.3V Analog power supply
27	AD_GND_5		ADC Analog GND
28	AD_VDD3_4		ADC 3.3V Analog power supply
29	AD_GND_6		ADC Analog GND
30	AD_VDD3_5		ADC 3.3V Analog power supply
31	AD_GND_7		ADC Analog GND
32	AD_VDD_1		ADC 1.2V Digital power supply
33	CRESET	I	CDEC master reset input
34	SRESET	I	SDEC master reset input
35	VDD1		1.2V Positive power supply
36	GND1		Digital GND
37	AGC1	O	ADC1 AGC control signal output
38	AGC2	O	ADC2 AGC control signal output
39	SCLKI	I/O	SDEC Clock input/output
40	CLK_SC	O	System microcomputer clock output
41	VDD2		1.2V Positive power supply
42	GND2		Digital GND
43-52	XADC0-9	I/O	External ADC input (Bit0-9)
53	VDDIO2		3.3V Pad ring power supply
54	GNDIO2		Pad ring GND
55,56	XADC10,11	I/O	External ADC input (Bit10,11)
57	LOCK_M	O	Terr. Dem lock indicator output
58	LOCK_S1	O	Sat. Dem1 lock indicator output
59	LOCK_S2	O	Sat. Dem2 lock indicator output
60	VDD3		1.2V Positive power supply
61	GND3		Digital GND
62	RS232CTLIN	I	RS232C control input
63	RS232CTLOUT	O	RS232C control output
64	SDA	I/O	I2C-bus serial data input/output
65	SCL	I	I2C-bus serial clock input
66	CDEC_INTR	O	CDEC Interrupt output
67	SDEC_INTR	O	SDEC Interrupt output (GPIO_0)
68	SCLKO	O	SDEC Master clock output
69	RS232TX	O	CDEC-SDEC RS232C transmitter output
70	RS232RX	I	SDEC RS232C receive input
71	APLL_GND		Audio PLL GND
72	APLL_VDD		Audio PLL 1.2V power supply

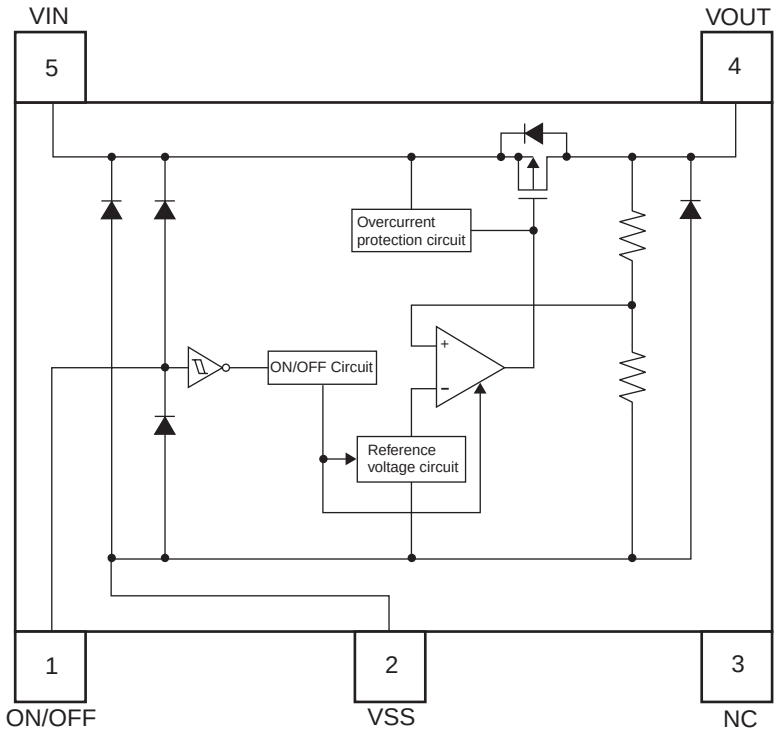
Pin No.	Pin Name	I/O	Function and Operation
73	SFILT	O	SDEC Audio PLL filter output
74	GND4		Digital GND
75	VDD4		1.2V Positive power supply
76	FIT	I	RFU input (FIT_0)
77	SAII_DATA_REG	O	External audio output data request (GPIO_5)
78	SAII_SCLK	I	External audio input clock (SCLK_USSIO1)
79	SAII_DATA	I	External audio input data (DATA_USSIO1)
80	SCAN_EN	I	Scan test enable input
81	OCLK	O	Oversampling clock output
82	LRCKT	O	I2S left/right clock output
83	SCKT	O	I2S serial clock output
84	SDO	O	I2S output data (PCM data)
85	GPIO2	I/O	RFU input/output (GPIO_2)
86	GND5		Digital GND
87	VDD5		1.2V Positive power supply
88	I958_OUT	O	S/PDIF IEC958 output
89	GPIO1	I/O	RFU input/output (GPIO_1)
90	DP_EN	I/O	Data port frame sync input/output (USSIO3)
91	DP_CLK	I/O	Data port clock input/output (SCLK_USSIO3)
92	DP_DATA	I/O	Data port data input/output (DATA_USSIO3)
93	CAP_RST	I/O	CAP reset input/output
94	GNDIO3		Pad ring GND
95	VDDIO3		3.3V Pad ring power supply
96	CAP_SCL_M	O	CAP I2C master serial clock output
97	CAP_SDA_M	I/O	CAP I2C master serial data input/output
98	PCFS0	I/O	PC PRC Frame sync #0 input/output
99	PCDC0	I/O	PC data clock #0 input/output
100	PCSD0	I/O	PC serial data #0 input/output
101	PCFS1	I/O	PC PRC Frame sync #1 input/output
102	PCDC1	I/O	PC data clock #1 input/output
103	PCSD1	I/O	PC serial data #1 input/output
104	GND6		Digital GND
105	VDD6		1.2V Positive power supply
106	PCBS_SYNC	I/O	Slave synchronization input/output
107	MFP_CLK	I/O	TDM master frame clock input/output
108	SM	I/O	Slave/master PRC control input/output
109-113	MADD11-7	I/O	External memory address input/output (Bit11-7)
114	GND7		Digital GND
115	VDD7		1.2V Positive power supply
116-122	MADD6-0	I/O	External memory address input/output (Bit6-0)
123,124	MBS1,0	O	External memory block select output (Bit1,0)
125	GNDIO4		Pad ring GND
126	VDDIO4		3.3V Pad ring power supply
127,128	MCS1,0	O	External memory chip select output (Bit1,0)
129	RAS	O	External memory row address strobe output
130	CAS	O	External memory col. address strobe output
131	MWE	O	External memory write enable output
132-135	MDQ7-4	I/O	External memory data input/output (Bit7-4)
136	GND8		Digital GND
137	VDD8		1.2V Positive power supply
138-141	MDQ3-0	I/O	External memory data input/output (Bit3-0)
142	MDQM	O	External memory data mask output
143	CLKON	O	23.92MHz inv. clock output
144	MCKE	O	External memory clock enable output

5 6 7 8

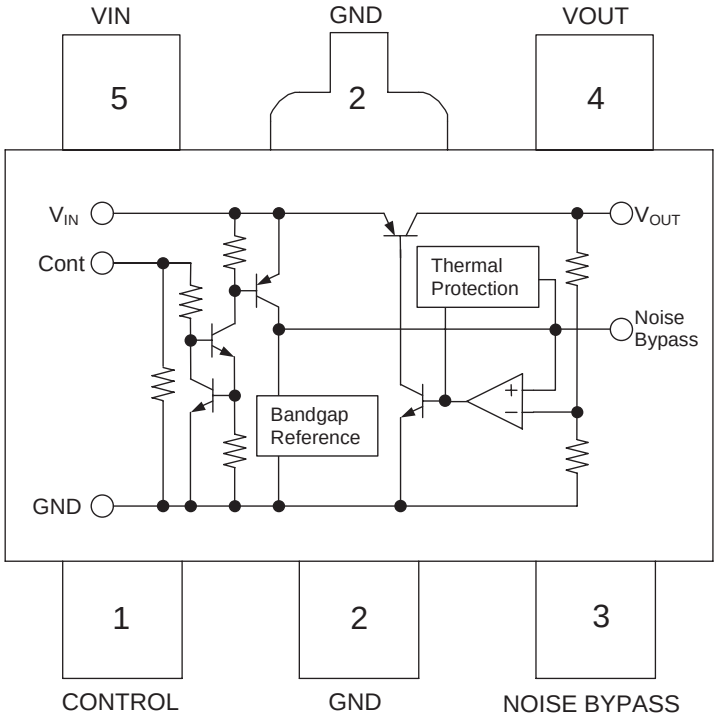
* STA850P



* S-T111B33MC-0GS



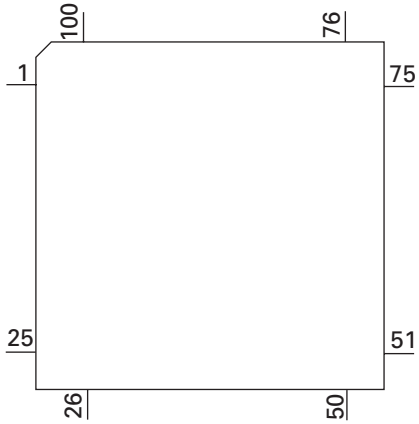
NJM2880U1-05



● Pin Functions(PEG100A)

Pin No.	Pin Name	I/O	Function and Operation
1-5	NC		Not used
6	BYTE	I	External bus width select input
7	CNVSS	I	Processor mode select input
8,9	NC		Not used
10	$\overline{\text{RESET}}$	I	Reset input
11	XOUT		Crystal oscillator connection pin
12	VSS		GND
13	XIN		Crystal oscillator connection pin
14	VCC		Power supply (3.3V)
15	NMI		Not used
16	NC		Not used
17	STBY	I	Stand-by sense input
18	DATAINT	I	LSDP receive interrupt input
19-26	NC		Not used
27	NAVIRX	I	Navigation system I/F input
28	NAVITX	O	Navigation system I/F output
29	NC		Not used
30	LSDPRX	I	LSDP signal input
31,32	NC		Not used
33	MAINTX	O	Main microcomputer I/F output
34	MAINRX	I	Main microcomputer I/F input
35-38	NC		Not used
39	EPM		Not used
40	NC		Not used
41	TESTIN	I	Test program sense input
42-59	NC		Not used
60	VDD		Power supply (3.3V)
61	NC		Not used
62	VSS		GND
63-69	NC		Not used
70	FLASHIN		Not used
71-75	NC		Not used
76	RDT	I/O	EEPROM data input/output
77	RCK	O	EEPROM clock output
78	RCS	O	EEPROM chip enable output
79-93	NC		Not used
94	AVSS		Analog GND
95	NC		Not used
96	VREF		Analog reference voltage
97	AVCC		Analog power supply
98-100	NC		Not used

* PEG100A

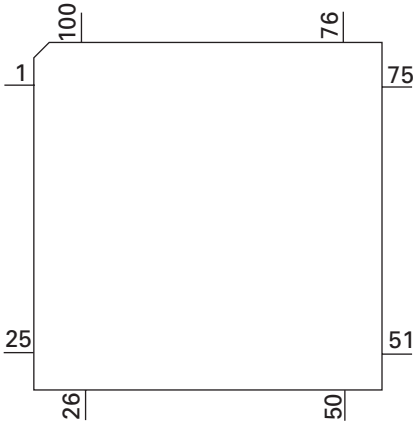


● Pin Functions(PEG099A)

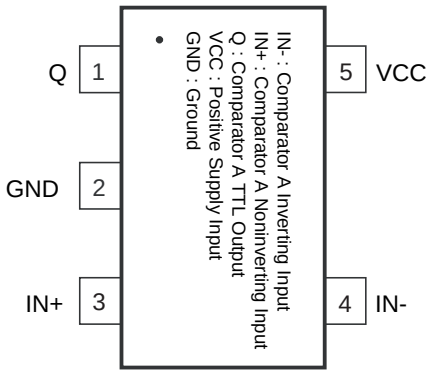
Pin No.	Pin Name	I/O	Function and Operation
1-5	NC		Not used
6	BYTE	I	External bus width select input
7	CNVSS	I	Processor mode select input
8,9	NC		Not used
10	$\overline{\text{RESET}}$	I	Reset input
11	XOUT		Crystal oscillator connection pin
12	VSS		GND
13	XIN		Crystal oscillator connection pin
14	VCC		Power supply (3.3V)
15	NMI		Not used
16,17	NC		Not used
18	INTR	I	CDEC frame interrupt input
19	IPTA4IN	I	IP-BUS connect input
20	IPPW	O	IP-BUS driver power supply control output
21-26	NC		Not used
27	IPIN	I	IP-BUS data input
28	IPOUT	O	IP-BUS data output
29	IPFLASHTX		Not used
30	IPFLASHRX		Not used
31,32	NC		Not used
33	SUBTX	O	Sub microcomputer communication output
34	SUBRX	I	Sub microcomputer communication input
35	NC		Not used
36	$\overline{\text{SUBSTBY}}$	O	Sub microcomputer stand-by control output
37	ACCPW2	O	Microcomputer active state output
38	ACCPW	O	Not used
39	EPM		Not used
40	NAVSW	I	Connection of the navigation system detect input
41	TESTIN	I	Test program sense input
42	MUTE	O	Mute output
43	ANSW	O	Source select output
44	CE		Not used
45-48	NC		Not used
49	SYSPW	O	Audio circuit power supply output
50-56	NC		Not used
57	DAC_EN	O	DAC IC latch enable output
58	NC		Not used
59	RESET_N	O	SSDEC reset output
60	VDD		Power supply (3.3V)
61	NC		Not used
62	VSS		GND
63,64	NC		Not used
65	MRESET	O	CDEC reset output
66-69	NC		Not used
70	FLASHIN		Not used
71	$\overline{\text{ASENS}}$	I	ACC sense input
72	$\overline{\text{ASENB}}$	I	ACC (IP-BUS) sense input
73	$\overline{\text{BSENS}}$	I	Backup sense input
74,75	NC		Not used
76	RDT	I/O	EEPROM data input/output
77	RCK		Not used
78	RCS		Not used
79-81	NC		Not used
82	XMPW	O	XM tuner power supply control output
83-92	NC		Not used
93	SDA	I/O	RF/HCMOS9 communication data input/output
94	AVSS		Analog GND
95	SCL	O	RF/HCMOS9 communication clock output
96	VREF		Analog reference voltage
97	AVCC		Analog power supply

Pin No.	Pin Name	I/O	Function and Operation
98	NC		Not used
99	DACDT	O	DAC IC data output
100	DACCL	O	DAC IC clock output

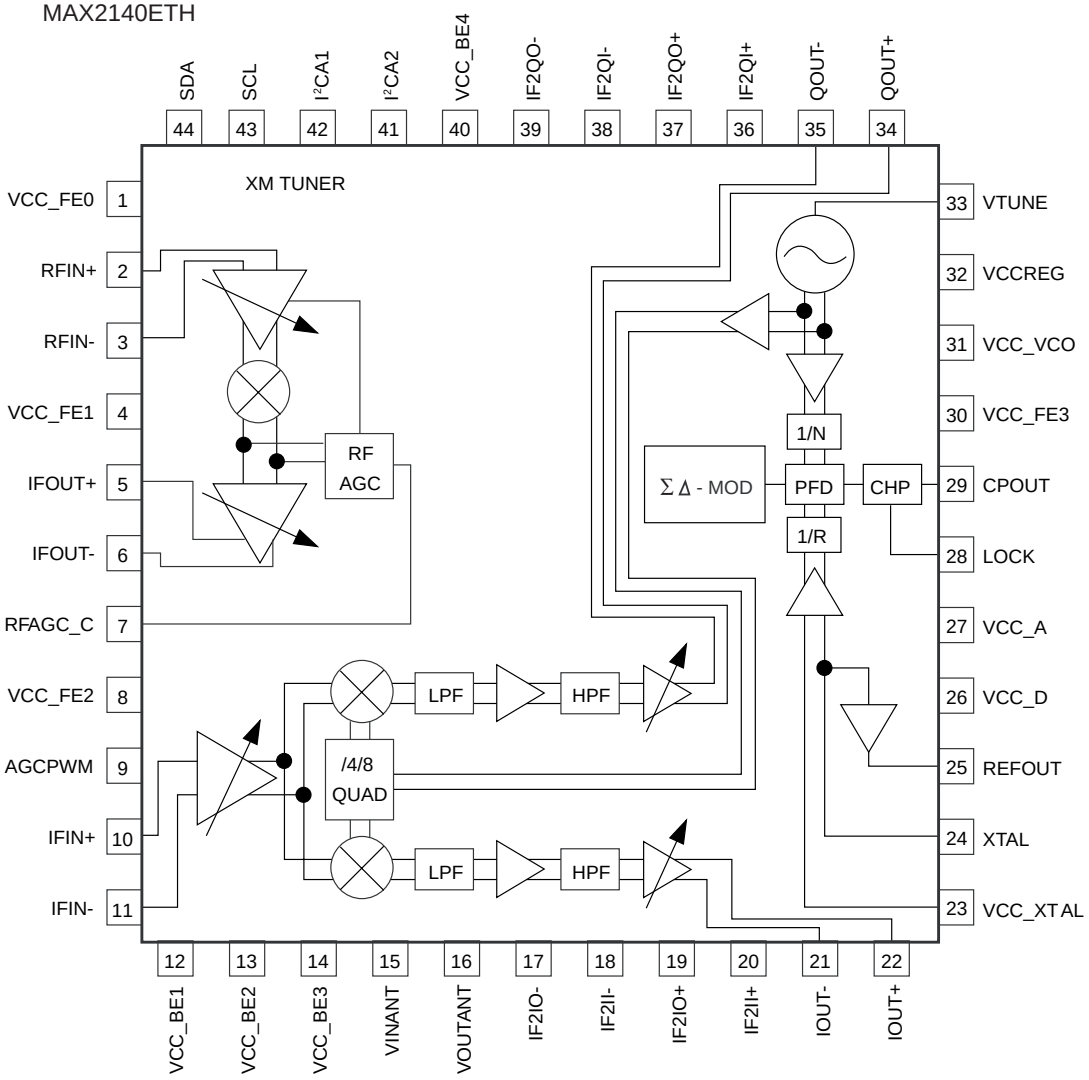
* PEG099A



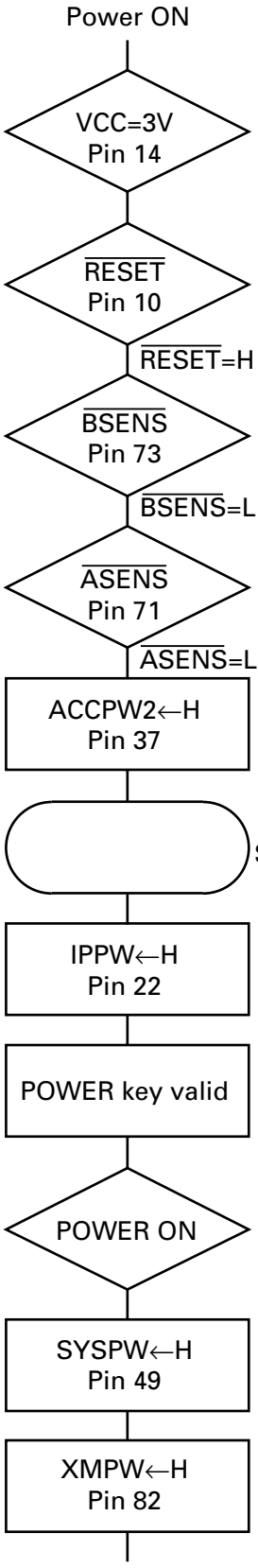
* MAX999EUK

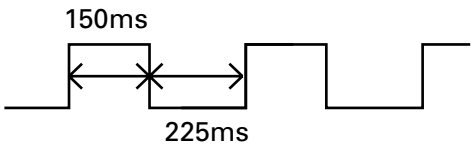


MAX2140ETH



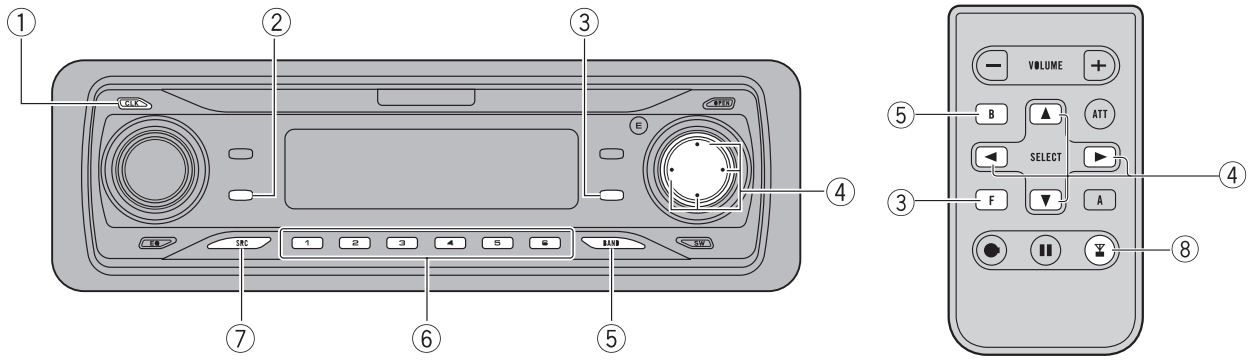
7.3 OPERATIONAL FLOW CHART





In case of the above signal, the communication with IP-BUS may fail.

8. OPERATIONS



Head unit (e.g. DEH-P6700MP)

① **CLOCK button**
Press and hold to change channel select mode.

② **DISPLAY button**
Press to select different displays.

③ **FUNCTION button**
Press to select functions.

④ **▲ / ▼ / ◄ / ► buttons**
Press to select a channel, recall a channel and select a category. Also used for controlling functions.

⑤ **BAND button**
Press to select among three XM bands and cancel the control mode of functions.

⑥ **1–6 buttons**
Press for preset tuning.

⑦ **SOURCE button**
Head unit is turned on by selecting a source. Press to cycle through all of the available sources.

Remote control (e.g. DEH-P6700MP)

You can operate in the same way with the remote control supplied with the head unit.

⑧ **TUNER button**
Press to select the tuner as the source.

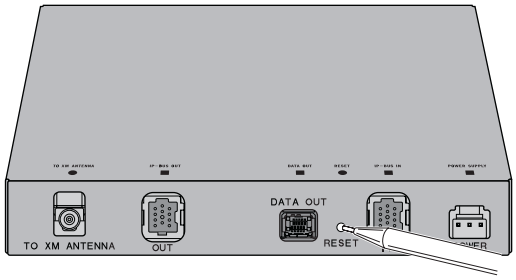
Before You Start

Resetting the microprocessor

The microprocessor must be reset under the following conditions:

- Prior to using this unit for the first time after installation
- If the unit fails to operate properly
- When strange or incorrect messages appear on the display
- When changing the navigation system or unit combination

- **Press RESET on the unit with a pen tip or other pointed instrument.**



XM tuner

Power supply for this unit

The method for turning this unit's power supply ON/OFF differs according to other units you combine with it.

When combining this unit with either AVIC-D1, AVIC-N1, or AVIC-N2:

- This unit's power supply can be turned OFF only if the ignition switch is turned OFF.If for any reason you want to switch the power of the unit OFF, switch the vehicle's ignition off (turn the ACC of your vehicle to OFF).

When combining with another head unit (or AV head unit):

- When the head unit's power supply is OFF, this unit is also OFF. (Selecting a source other than XM tuner will not turn this product off.)
- This unit's power supply can be turned OFF if the ignition switch is turned OFF. If for any reason you want to switch the power of the unit OFF, switch the vehicle's ignition off (turn the ACC of your vehicle to OFF).

Selecting the XM source

1. Press SOURCE to turn the head unit on.

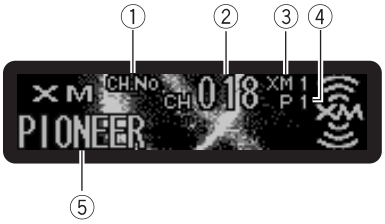
2. Press SOURCE to select "XM" source.
Press **SOURCE** repeatedly to switch between the following sources:
XM tuner – Tuner – Television – DVD player/Multi-DVD player – Built-in CD player – Multi-CD player – External unit 1 – External unit 2 – AUX

Note

To quit listening to the XM tuner, press **SOURCE** to switch to another source or press **SOURCE** and hold until the head unit turns off.

XM tuner

Listening to XM



These are the basic steps necessary to operate the XM.

① **XM channel select setting indicator**
Shows what channel select setting has been selected. **CH.No** is displayed when **CH NUMBER** is selected, and **CAT** is displayed when **CATEGORY** is selected.

② **XM channel number indicator**
Shows to which XM channel number the tuner is tuned to.

③ **XM band indicator**
Shows the XM band which has been selected.

④ **XM preset number indicator**
Shows what XM preset has been selected.

⑤ **XM channel name**
Shows the channel name of broadcast channel.

1. Press SOURCE to select a XM source.

2. Press BAND to select a band.
Press **BAND** until the desired band is displayed, **XM1**, **XM2** or **XM3**.

3. Press ◄ or ► to select the desired channel.
The channel number moves up or down successively. Channels that cannot currently be selected are skipped, and the next channel is selected.
- If you press and hold ◄ or ►, you can increase or decrease channel number continuously.
- You can also select a channel from a desired channel category. (Refer to "Switching the channel select mode".)

4. Press SOURCE and hold until the head unit turns off or press SOURCE to select another source.

Note

- When you turn the power on, change the source to XM tuner, or select a channel, it may take a few seconds while this unit acquires and processes the satellite signal before you can hear anything.
- Depending on the head unit, it may be possible to switch to channel number direct input mode using the allocated button on the remote control (e.g. **DIRECT**).

XM tuner

Storing and recalling channels

If you press any of the preset tuning buttons **1–6** you can easily store up to six channels for later recall with the touch of a button.
- Memory and recall are for broadcasts. If you recall a memorized broadcast that has been moved to another channel, the channel to which the broadcast was moved is selected.

• When you find a channel that you want to store in memory, press one of the preset tuning buttons 1–6 and hold until the preset number stops flashing.
The number you have pressed will flash in the preset number indicator and then remain lit.
The selected channel has been stored in memory.
The next time you press the same preset tuning button, the channel is recalled from memory.

Note

- Up to 18 channels, six for each of the three XM bands, can be stored in memory.
- When channel number select mode is selected, you can also use ▲ and ▼ to recall channels assigned to preset tuning buttons **1–6**.
- If a channel you have recalled cannot be selected, a message is displayed for 2 seconds and the unit returns to the operating status before the channel was recalled.

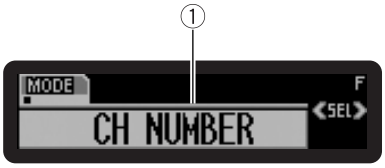
Switching the XM display

XM channels each have a channel number and channel name. XM programing also carries the song or program title, the artist name and category when available.

• Press DISPLAY.
Press DISPLAY repeatedly to switch between the following settings:
Channel name – Artist name/feature – Song/program title – Channel category

XM tuner

Introduction of advanced tuner operation



① **Function display**
Shows the function status.

• Press FUNCTION to display the function name.
Press **FUNCTION** to display the following function:
MODE (Channel select mode)

• To return to the XM display, press **BAND**.

Switching the channel select mode

When selecting a channel, you can switch between selecting a channel by channel number or by channel category.
Initially, channel number select mode isselected.

1. Press FUNCTION to select MODE.
Press **FUNCTION** until **MODE** appears in the display.

2. Press ◄ or ► to select the desired channel select mode.
Press ◄ or ► repeatedly to switch between the following settings:
CH NUMBER (Channel number select mode)–
CATEGORY (Channel category select mode)

Note

Depending on the head unit you are using, it may be possible to directly switch between the channel select mode using the allocated button (e.g. **CLOCK**).

XM tuner

Selecting the channel in the channel category

Channels are organized into various program categories, e.g. Rock, Classic, Jazz. You can search between different categories, and then search among channels within each channel category.

1. Select the channel category select mode. (Refer to "Switching the channel select mode" above.)

2. Press BAND to return to the previous display.

3. Press ▲ or ▼ to select the desired channel category.
Once you select a channel category, the unit searches for channels in that category.
During search, the channel category doesn't immediately change even if you press the button.
To successively change the channel category, continue pressing the button.

4. Press ◄ or ► to select the desired channel in the selected channel category.
The channel number moves up or down in the selected channel category.
Channels that cannot currently be selected are skipped, and the next channel in that channel category is selected.

Note

If you select a channel of another category by channel recall, etc., during steps 3 and 4, the category selected in step 3 still remains in memory. If you press ◄ or ►, the channel number moves up or down in the category selected in step 3 regardless of the category of the present channel.

Display the ID code (Radio ID)

Each XM tuner is identified with a unique Radio ID. You will need the Radio ID when activating XM service or when reporting a problem. How to display the ID code depends on the channel select mode.

Note

Carefully check your XM Radio ID. The letters **F**, **I**, **O**, and **S** are not used.

Channel number select mode

If you select **CH 000**, the ID code is displayed.

• Press ◄ or ► to select the channel number zero (CH 000).

Channel category select mode

RADIO ID is provided as a channel category for displaying the ID code.

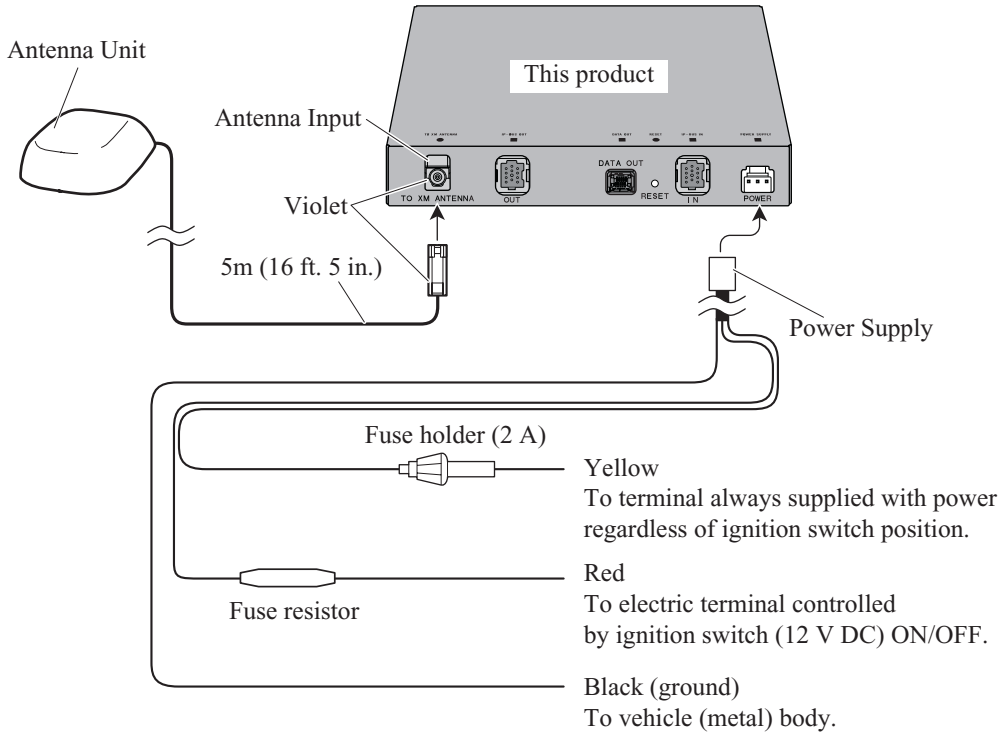
• Press ▲ or ▼ to select the RADIO ID from channel category.

Note

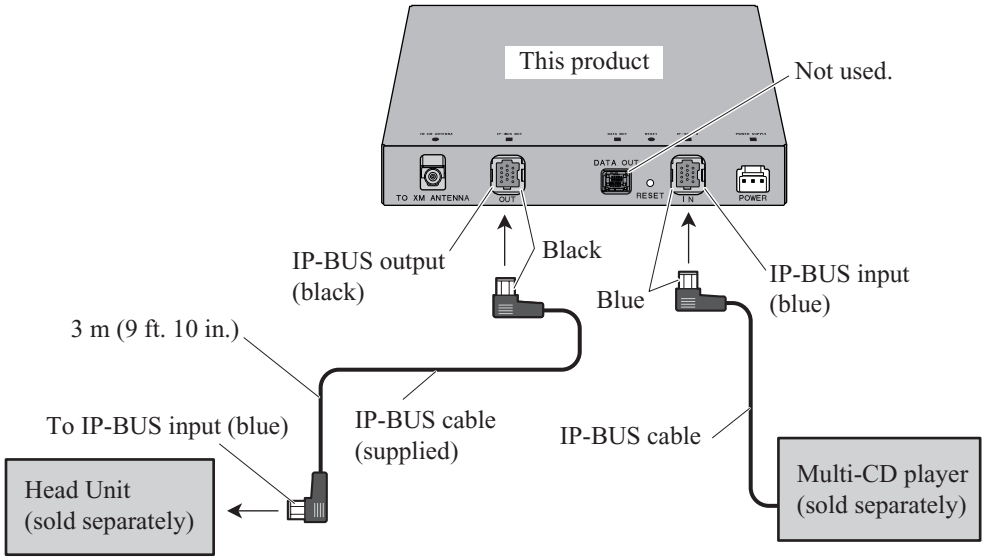
• If you select another channel, display of the ID code is canceled.
• Display of the ID code repeats displaying **RADIO ID** and the ID code one after the other.

● CONNECTION DIAGRAM

Connecting the power cord and antenna



Connecting the system (1)



Connecting the system (2)